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ORIGINAL ARTICLES.

A PECULIAR ALVEOLAR MELANOMA OF THE CHOROID WITH METASTASES.

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Primary malignant new growths of the choroid are, as is well known, practically always some form of sarcoma. These sarcomata can in this situation be further limited to two classes: (*a*) Sarcomata which produce an intercellular substance, as spindle cell sarcoma, chondro sarcoma and osteosarcoma. (*b*) Sarcoma which have an alveolar structure, as the melanoma, or, as this growth is otherwise termed, the chromatophoroma or melanotic sarcoma.

From the nature of the growth in the eye, it has been suggested that the spindle cell sarcoma takes its origin from the outer layers of the choroid, while the melanoma (the pigment growth) comes from the more deeply pigmented inner layers. Spindle cell sarcoma can arise from any situation where there is connective tissue, while a melanoma, according to Ribbert, can only arise from skin or mucous membrane developed from skin, from displaced skin or from the eye. In other words, melanomata arise from the chromatophores.

It is manifestly wrong, therefore, to speak of a pigmented spindle cell sarcoma, though so-called pigmented spindle cell sarcoma have been described, especially in the eye, and in this instance we have pigment in a spindle cell structure; for the spindle cell sarcoma comes in the class of sarcoma whose cells produce an intercellular substance, but do not produce pigment.

The interest in the case here reported attaches itself to the fact that until a very complete histological examination was made it was thought that there might be in the eye two anlagen, each giving rise to a new growth, the one a spindle cell sarcoma, the other a melanoma. It is on the differentiation of these two forms of sarcoma and the deviation from type that this article is based.

The case also assumes clinical interest from the slow development of this malignant growth. Five years elapsed from the removal of the eye to the death of the patient. The clinical history of the case is as follows:

David Dane, a peddler, forty years old, born in Sweden, entered the Boston City Hospital September 16, 1903, suffering from pain in the thighs and complaining of a lump in the left abdomen. Five years previously (August 22, 1898,) he had been admitted to the Massachusetts Charitable Eye and Ear Infirmary. He then had not seen with the left eye for four years, during which time he was troubled on and off with pain. Examination showed the left eye sunken and sightless. Globe tender and painful. Enucleation was done without incident, and

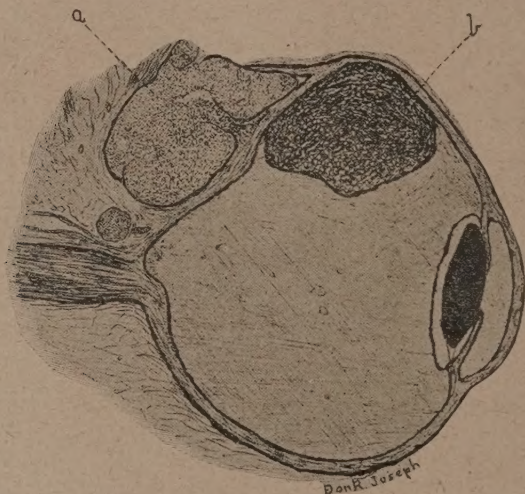


FIG. 1.—Section through enucleated eye showing original growth. A, spindle cell mass. B, pigmented mass.

a fleshy mass, extending from the optic nerve to the insertion of external rectus, was removed. Wound healed and patient was discharged.

On admission to the Boston City Hospital (five years after this operation) the patient showed visible swelling of left hypochondrium, and on palpation a hard tumor, the size of the palm of the hand could be felt, apparently attached to the left lobe of the liver. There was also bulging of lower third of left chest. The right leg was held flexed on pelvis, but could be extended. The patient complained of constant and severe pain in the right thigh, shooting to ankle. He took nourishment poorly, and rapidly failed; developed paraplegia with constipation, bed sores and bladder symptoms, and died December 1st.

The autopsy was performed by myself five and one-half hours after death. The following is the protocol (in abstract):

Body of an emaciated, slender man. No œdema. Left eye missing.
Peritoneal Cavity.—Mesenteric lymph nodes small, but firm, and gray-

ish white on section. The transverse colon is bound to the under surface of the liver by fairly firm adhesions. On removing the intestines two large tumor masses are seen on either side of the lumbar vertebræ, infiltrating the psoas muscles. The largest mass is on the right side, measuring 16x11x5 cm. Cut surface is mottled gray and brown-black, and fairly firm. Several small cysts are seen in the upper part, one-half cm. in diameter, filled with yellowish viscid fluid. On the left side the tumor mass is 10x5x3 cm. The outside of the mass is covered by normal-looking muscle. On section the tissue is soft and infiltrated with a grayish, viscid, in places puriform, material.

The lumbar vertebræ that are covered by these tumor masses are eroded, especially on the right side, and are mottled dirty gray and black.

Pleural Cavities.—Loose columnar and solid adhesions over both backs, obliterative below. Over 400 c. c. of clear fluid (sp. gr. 1012) in anterior part of right cavity,

Pericardial Cavity.—Over 50 c. c. clear fluid. Normal.

Heart.—Myocardium, endocardium and valves normal.

Chambers contain cruor clots. *Coronaries.* normal.

Lungs.—Retracted, dry, with considerable carbon deposit. In central portion of each lower lobe is a walnut-sized, firm, well-defined nodule of fleshy consistence and a homogeneous pinkish-gray color. In one nodule is a well-defined area of necrosis, dry, friable, in places calcareous. There is no evidence of tuberculosis at apices. Bronchial lymph nodes normal.

Spleen.—Weight 300 gms. On section dark red. Small amount of spleen substance adheres to knife on scraping. Trabeculæ, vessels, and Malpighian bodies evident.

Gastrointestinal Tract and Pancreas.—Normal.

Liver.—Weight 3250 gms.—There is a general increase in size, which is more marked in the left lobe which is two-thirds the size of the right. On the upper surface of the left lobe are two large nodules each 8x7 cm. in diameter. There are also several small nodules and the under surface is covered by these large nodular masses. In the right lobe the process is practically the same although there are fewer large nodules and more small nodules. On section these areas vary from dirty grayish white in color throughout, to areas which are mottled grayish white and black, looking not unlike ripe Roquefort cheese.

Kidneys.—Weight 365 gms. Cortex 7 mm. Capsule strips readily. Right kidney dark red in color. Markings distinct. Left kidney somewhat more firm than right. On section shows throughout irregularly scattered, dirty gray, opaque areas, but not definitely marked off from the kidney substance.

Adrenals.—Normal.

Bladder.—Mucosa is somewhat reddened and covered with considerable mucus.

Prostate.—Appears normal.

Testicles.—Thread rapidly.

Brain.—Weight, 1270 gms. Normal save for a fairly well marked edema.

ANATOMICAL DIAGNOSIS.

Melanotic sarcoma of lungs, liver, mesenteric lymph nodes, psoas muscles and lumbar vertebrae.

Pyelonephritis. Acute prostatitis.

Chronic adhesive pleuritis.

Hydrothorax (right).

Edema of brain.

Eye.—The enucleated eye which was obtained at the Massachusetts Charitable Eye and Ear Infirmary, through the kindness of Dr. F. H. Verhoeff, presents on section two apparently distinct tumor masses. The first is at the equator and within the chamber. It is encircled by connective tissue in which is considerable pigment. It is black in color, irregularly oval and measures 12x7 mm. The second mass is just posterior to the first, a part of it is separated from the first mass only by the sclera which is apparently behind. It extends nearly to the entrance of the optic nerve. This mass is gray in color, similar in contour to the first, and measures 12x8 mm.

Histology.—With the exception of the enucleated eye which had been preserved in formaldehyde, tissue was preserved in Zenker's fluid, and paraffine sections stained with eosin methylene blue and Mallory's fibroglia, connective tissue, and phosphotungstic acid-haematoxylin stains. The latter stain was used especially for the demonstration of intercellular substances. For the purpose of finding the best areas, pieces from various regions were explored by means of frozen sections stained with haematoxylin-eosin.

Histology Eye.—The first mass described consists entirely of pigment and necrotic cell masses. No definite cell picture can be made out but some connective tissue and remnants of blood vessels are seen. The pigment, both in large masses and fine granules, is everywhere present.

The mass outside the sclera is well preserved and shows a connective tissue stroma in which are masses of spindle cells. Some of the cells are in mitosis. The greater part of the connective tissue is at the periphery of the nodule. It comes apparently from the sclera and forms an alveolar network in which the cell masses lie. At the periphery, the cells are few in number but at the center of the tumor typical spindle cell masses are seen. Here the connective tissue is small in amount, but it appears to be a continuation of the fibrils from the sclera and not an intercellular substance formed by the cells.

The posterior chamber of the eye, outside the definite tumor previously

described, shows remnants of blood vessels and connective tissue together with necrotic cell masses that have the appearance of having been spindle cells.

Left Psoas.—Section from the tumor on the left side of the lumbar region of the spinal column show an apparently typical spindle cell sarcoma. Much of the tumor mass is necrotic. The remainder consists of small spindle-shaped cells, closely packed, having elongated oval nuclei. There is no intercellular substance; the cell bundles are small, so that several groups of cells running in different directions may be seen

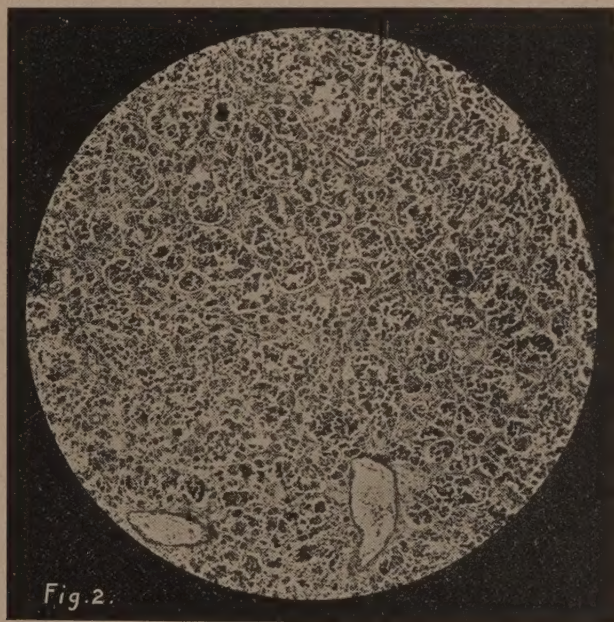


FIG. 2.—Typical alveolar melanoma from a metastasis in liver. $\times 70$.

in the same section. The nuclei show occasional but not numerous mitotic figures. The cell masses have a definite alveolar arrangement, separated by a thin connective tissue stroma, in which are blood vessels of varying size. In cross-section the vessels, which are comparatively numerous, show an alveolar arrangement of the cells about the vessel rather than a grouping of cells, with blood vessels between the cell groups.

Right Psoas.—The section from the tumor on the right side of the lumbar vertebrae presents an entirely different picture from the foregoing. In general the cells have an alveolar arrangement. They are round, oval

or irregular, with round or irregular vesicular nuclei, the chromatin being massed in the center and are richly supplied with blood vessels. Generally they are distinctly grouped about a vessel in alveolar arrangement. Many of the cells contain a considerable amount of yellowish-green pigment. There are large, pale pigment-bearing cells about twice the size of the ordinary tumor cells and also small pigment-bearing cells about half or quarter the size of the average tumor cells. Pigment appears in these cells, both as dense round masses in the cytoplasm, similar in morphology to the hyaline droplets that occur elsewhere, and as

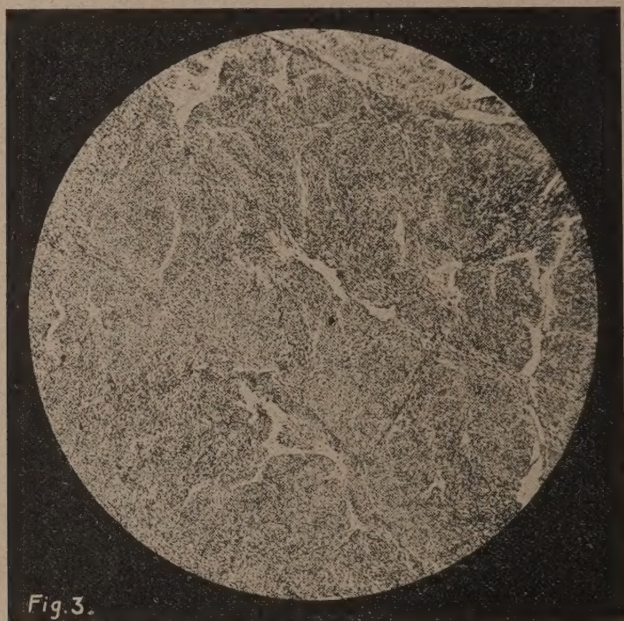


Fig. 3.

FIG. 3.—Spindle cell type of growth, also from liver. $\times 70$.

lighter granular material diffusely filling the entire cell. Certain areas in the section are practically free from pigment. The cells are loosely packed. In general there is very little connective tissue between the cells, but certain areas show broad bands of connective tissue, in which the cells lie snugly or in the small masses or encircle a larger, stroma free, cell mass.

Liver.—The larger tumor masses are of the spindle cell type, the same as described under left psoas. In addition to the spindle cell tumor, however, one section shows a small nodule 2 mm. in diameter, consisting of masses of the alveolar melano-sarcoma cells as described under

right psoas. This area is definitely circumscribed, is directly under the capsule of the liver, and is in no way connected with the spindle cell growth. Apart from this, and not definitely defined from the surrounding liver parenchyma, is a similar still smaller area. The columns of liver cells surrounding are congested.

Lung.—Save for certain areas which will be described later on, the nodules from the lung show the spindle cell type of growth.

Lumbar Vertebrae.—Sections from right side show alveolar melanosarcoma with considerable inflammatory process.

Mesenteric Lymph Node.—The cells here with low power have some-

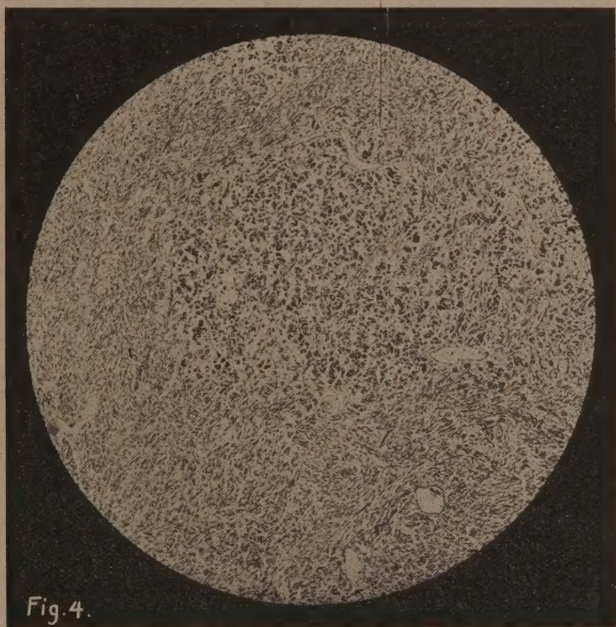


FIG. 4.—Both types of growth intermingled, from field adjacent to figure 3. x 70.

what the appearance of being arranged in rouleaux or are grouped about blood vessels in a perithelial arrangement. Only a very little pigment appears in this section.

Discussion.—Independent sections from various situations would convince one that there were two separate and distinct forms of malignant new growth present in the case. First, a typical spindle cell sarcoma of eye, left psoas, lung and liver; and, second, a typical melanotic sarcoma of eye, right psoas, liver, lumbar and vertebrae.

A more careful consideration of specially selected sections, however,

show many interesting facts and leads to the conclusion that only one tumor, pleomorphic in character, is present.

In the original spindle cell type of growth from the enucleated eye considerable pigment is seen within and outside the sclera and in close relation with the spindle cell growth. The pigment is derived, evidently from the broken-down cells of the choroid. The cells passing through the sclera by means of the blood vessels.

One section from the left psoas, which everywhere shows the *spindle cell* type of growth, is loaded with pigment. The pigment appears as brown granular masses in and outside cells. It is most abundant at the periphery of the tumor, but can be seen everywhere throughout the section. It is evident then that the type of cells outside the sclera have in some instances taken pigment with them in their metastases; though these cells outside the sclera are spindle shaped rather than round or oval.

The alveolar arrangement is characteristic throughout the metastases, and taken in connection with the fact that these cells produce no intercellular substance, shows the close histological relationship to the class of tumors described as alveolar melanoma. The characteristics of the alveolar melanoma are to grow in alveolar arrangement (somewhat similar to that of a carcinoma); to produce pigment, and not to produce intercellular substances. With these facts for a starting point, further evidence is sought to prove that both tumors are the same and belong to the alveolar melano sarcoma group rather than to the spindle cell group. This evidence is found in specially selected sections from the lung and right and left psoas. These sections show a mingling of the two types of tumor previously described. In these sections the spindle cell type of sarcoma predominates, but small circumscribed and larger diffuse areas are seen where the cells assume the round or oval type, with many pigment-bearing phagocytes. These cells, as in the uncomplicated melanoma, are more loosely packed than the spindle cells and richer in blood supply. These cell masses appear often in small nodules, usurping the spindle cell growth much in the same manner as the small area previously described appears in the liver parenchyma. The particular features common to both types of growth is the alveolar arrangement of cells about the blood vessels, and the lack of production of an intercellular substance.

Summary.—We have originally a tumor of the eye, coming from the choroid, which appears in two forms, a definite pigment-bearing mass (in which, unfortunately, the cells cannot be studied, owing to the necrosis) and a spindle cell mass which practically does not show pigment. Five years later autopsy shows in various regions metastases of both types of tumors. Sections of these metastases taken independently might readily be diagnosed as alveolar melanoma and spindle cell sarcoma respectively. We find, however, certain sections which show both

types of tumor curiously intermingled. To solve the problem, then, as to whether two separate and distinct tumors, each with its own metastases, or whether only one tumor is present, we must consider the characteristics peculiar to each form of growth.

Though we have in certain instances features peculiar to the spindle cell sarcoma, such as the shape of the cells, the compactness of the structure and the relatively smaller number of blood vessels, nevertheless the absence of the production of an intercellular substance, the tendency to grow in alveolar arrangement, the presence of pigment, and the relation of the cells to the blood vessels, compel us to class the tumor as an alveolar melanoma.

I have been unable to find in the literature any description of a similar growth. Although as previously mentioned, tumors composed of spindle shaped cells bearing pigment have been described, but never in the combination seen in this instance.

Why this modification of cell structure should take place might tempt discussion. Assuming that a sarcoma derived from the outer layer of the choroid is of the spindle cell type, is the passing of pigment derived from the chromatophores through the sclera (the character of the original pigment-bearing cell being destroyed) sufficient to stimulate a proliferation of cells in this locality in a manner common to new growth arising in this situation? This would lead to the conclusion that a substance (a cell product let us say) and not a cell, could be the starting point of a new growth. We have many points to uphold this theory. Malignant growths do not arise from a modification of the cells of a part; *i. e.*, we do not now believe in the sarcomatous or a carcinomatous degeneration. Tumor cells are always tumor cells no matter how early in its course we approach the growth. On the other hand, may we not have had two anlagen from each of which a separate growth arose? One outside the sclera, a spindle cell sarcoma, arising from ordinary connective tissue. The other within the globe a melanoma, arising from the chromatophous. And might not the former simply have been modified by the passing into it of the chromatophores, so that it took on many of the characteristics of a melanoma, retaining meanwhile the characteristic shape of its cells with all the variations shown in the metastases?

In conclusion, I wish to express my indebtedness to Dr. F. B. Mallory, whose valuable classification of sarcoma I have attempted to follow.

FUNCTIONAL DIAGNOSIS OF KIDNEY DISEASES.*

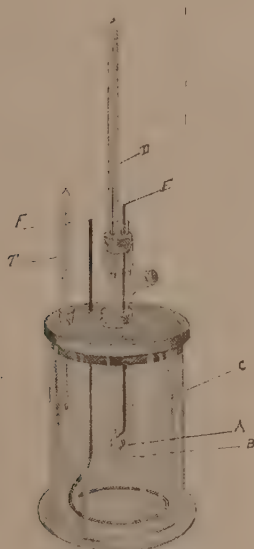
BY WM. M. ROBERTSON, M. D., of St. Louis.

It is not the object of this paper to add anything new to the literature which has already been published on this subject, nor have I a series of cases to report in support of the contentions of those who favor or oppose the value of this method of diagnosis. My object is to present in as brief a manner as possible the practical workings of the method as I have recently had opportunity of seeing it carried out on numerous cases in the clinic of Professor Casper, the greatest and most enthusiastic advocate of Functional Diagnosis of Kidney Diseases. When this subject was first brought to the attention of the profession, only a few years ago, like most medical or surgical discoveries its advocates were over enthusiastic and made for it extravagant claims which could not stand the test of time; the pendulum had swung too far in one direction. The theory was attacked by various men, especially Israel, who was disposed to reject it *in toto*. The reaction came and the pendulum swung back too much. After continuing their observations over a longer period of time, each side found that some statements had to be modified and others retracted, till now, while the subject is still new and there is much to be settled by the studies of careful and earnest workers, I believe that functional diagnosis has earned for itself a lasting position, and that it is of the greatest assistance to the kidney surgeon. I do not contend that it in any way replaces the older methods of examination and diagnosis, but the mortality following kidney operations has been so great, and that, too, at the hands of famous operators, that I think we should make use of every diagnostic means at our command before an operation on the kidney is undertaken. The kidneys are organs necessary to life and the removal of one must result fatally if the other is absent, or, if present, is too much impaired by disease to carry on the work required of it.

The difficulty of determining the sufficiency or insufficiency of the kidney action from the character of the urine caused Koranyi, some ten years ago, to turn his attention from solids eliminated in the urine to those which were retained in the blood, and he gave to the profession cryoscopy of the blood for the diagnosis of kidney sufficiency. This method is based on the following principles: That the freezing point of a solution is dependent on the number of molecules held in solution, and the greater the number of molecules the lower will the freezing point be below that of distilled water; that in cases of normal kidney activity the freezing point of the blood remains constant between 0.56° and 0.57° below the freezing point of distilled water and that retention in the system of the products of metabolism as a result of insufficient

* Read before St. Louis Surgical Club April 12, 1905.

kidney action is manifested by a lowering of the freezing point of the blood. Thus did Koranyi attempt to express with mathematical precision the degree of kidney sufficiency, and as experience confirmed the truthfulness of his claims in the vast majority of cases it seemed that a great advance had been made in kidney diagnosis. But further experience with this method soon demonstrated the fact that in those cases where it is most needed it is found wanting; that the freezing point of the blood can be influenced by other factors than kidney activity. Thus do we find in spite of complete kidney sufficiency an abnormal lowering of the freezing point of the blood in malignant tumors of the kidney, in



Beckmann's Apparatus.

one-sided pyonephrosis, in many abdominal tumors, in malarial attacks and attacks of acute gout. On the other hand, in cases of anemia, where the molecular concentration of the blood is diminished, the freezing point is abnormally high and approaches that of distilled water, so that, in these cases when a kidney insufficiency is present, the two factors working against each other, renal insufficiency on the one side and anemia on the other, can so neutralize each other that a normal freezing point of the blood is obtained. As most kidney diseases lead to a condition of anemia, which influences the freezing point in an opposite direction to that of insufficient kidney action, we are not in a position in these

cases to give any definite opinion as to the functioning power of the kidneys. These sources of error limit the practical application of cryoscopy of the blood within such narrow bounds as to make it at present of little value in kidney surgery.

The simplest and most practical apparatus for clinical purposes for determining the freezing point of blood and urine is the Beckmann apparatus (see Fig. —). It consists of an inner tube (A), which is placed in a larger tube (B), the space between the two serving as an air chamber. The two tubes are then placed in a larger vessel (C). This larger vessel (C) contains the freezing mixture consisting of ice and salt. In it are also a thermometer (T) for determining the temperature of the freezing mixture and a bent wire (F) which serves as a mixer. The inner tube (A) contains a mixer (E) made of bent platinum wire and a Beckmann thermometer (D), which is divided into hundredths of degrees.

The cryoscopic examination is then made as follows: The larger vessel is filled with the freezing mixture, the temperature of which should be from 7° to 10° below zero centigrade. Then in the tube (A) is placed enough distilled water to cover the mercury in the bulb of the thermometer and it is allowed to stay in the freezing mixture until its temperature approaches zero. The tube is then taken out and carefully dried and placed in the larger tube (B), and is thus prevented from coming in direct contact with the freezing mixture. Then constantly stirring with the mixer (E) and watching the thermometer, the mercury is at first seen to sink under the freezing point and then at the moment of freezing, in consequence of the warmth set free, rises again and remains fixed. This point is the freezing point of distilled water, and should be determined before every examination. By the same method we determine the freezing point of the fluid to be examined, and the difference between the two gives us the lowering of the freezing point sought for.

In determining the freezing point of urine, it is necessary that the urine should be fresh and that it should not be filtered, heated or mixed with chemicals, as its molecular concentration will be altered. The tube in which the urine is frozen must be clean and dry. Koranyi placed the freezing point of normal urine between 1.3° C. and 2.3° C. under that of distilled water, while other authorities placed it as high as 0.9° C. As the freezing point is dependent on the molecular concentration, it is evident that it is liable to great variations, and a patient whose urine to-day shows a freezing point of say 1.3° C. may tomorrow, after a drinking bout, show a freezing point of 0.6° C., both of which are strictly normal. It is on account of these wide variations that the freezing point of mixed urine is of no value to us, and it is only when we can compare the freezing point of the urine from one kidney with that of the other that it gives us valuable information regarding the work of each kidney. As has been frequently stated the freezing point is determined by the molecular concentration; the molecular concentration represents the solids

in the urine, and if the urine be collected separately from each kidney and the one urine has a freezing point of say 0.6° C. and the other of 1.3° C., we are forced to the conclusion that the power of the first kidney for eliminating solids is greatly diminished. This method, of course, gives us no idea as to the character of the solids, nor does it give us any idea of the nature of the disease. It only gives us a comparison of the power of each kidney for doing work. As a point of practical importance I will say that in order to accentuate as much as possible the difference between the freezing points of the two urines, it is better to work with concentrated urine, and it is well to instruct the patient to partake sparingly of liquids for twenty-four hours before the urine is collected.

In the clinic of Professor Casper this method goes hand in hand with, and is always employed in connection with the injection of phloridzin. As it is my object to deal with facts, or what I believe to be facts, and not with theories, it is not my intention to discuss, or even mention, the various foreign substances which have been artificially introduced into the system and by studying the relations which govern their elimination try to form an opinion of kidney activity. The principle is an old one and is based on the fact that some substances are eliminated by the kidneys with more difficulty when these organs are diseased than in healthy individuals. The only one of these substances which I propose to discuss is phloridzin, a glucoside discovered by von Merring many years ago, which is capable of producing the elimination of sugar. Klemperer found that this phloridzin glycosuria was diminished or absent in patients suffering from kidney disease, and von Zuntz discovered that phloridzin exerted a specific irritation upon the renal cells which enabled the kidneys to draw the previously formed sugar from the blood, thus causing a diminution of the sugar in the blood. Based upon these facts, Casper and Richter introduced the percentage of sugar contained in the urine from each kidney after the injection of phloridzin as a measure of the kidney work, and as a result of their investigations announced that the quantity of eliminated sugar is dependent upon the amount of functioning kidney parenchyma present and that the two stand in a direct ratio to one another; and that as the working power of the kidney is dependent upon the amount of functioning parenchyma present, we can measure the amount of kidney work by the amount of sugar eliminated.

As in the case of cryoscopy, this method is of service to us only when we compare the urine from each kidney, for no conclusion can be drawn from the absolute amount of glycosuria, as it is impossible to assign a normal value to the amount of sugar produced and eliminated by normal kidneys in a definite length of time by a definite amount of phloridzin. Normal kidneys excrete from phloridzin the same amount of sugar at the same time, and as this is a measure of the amount of working par-

enchyma present, it is evident that if after injecting phloridzin the urine from one kidney shows sugar to be entirely absent or present in a small amount, while the urine from the other kidney shows as great a percentage of sugar as would be expected under normal circumstances, we are justified in concluding that the working power of the first kidney is, to say the least, much diminished.

Phloridzin in the doses in which it is employed (0.01) seems to be harmless. Professor Casper says that in his vast experience with it he has never seen a single unfavorable symptom which could be attributed to its use. The glycosuria following the injection of phloridzin begins quickly and ends quickly. The sugar can be detected in the urine from fifteen to thirty minutes after the injection, and the phenomena is completed in about three hours. It is not a matter of great importance at what period of the process the urine is examined, whether at the beginning or toward the end, though at the beginning, say thirty minutes to an hour after injection, the sugar elimination is at its acme, and the difference between the normal and diseased kidneys is naturally much greater than it would be at the close of the effect of the phloridzin, when we are dealing with minimal amounts of sugar, and its quantitative estimation is more difficult. As already stated this method is to be employed in conjunction with cryoscopy, and the fundamental principles upon which the two rest may be briefly summarized as follows: That in healthy kidneys the urine collected from each kidney at the same time contains approximately the same number of molecules, that the freezing point of the urine from each kidney is the same, that after phloridzin injection the urine from each kidney collected at the same time contains approximately the same amount of sugar, that the more parenchyma there is destroyed or disturbed in its function the fewer molecules are eliminated by the kidneys, that therefore the freezing point of the urine from this side is not so low as that of the sound kidney, and that likewise the sugar elimination in a kidney whose parenchyma is diseased or destroyed is diminished or entirely absent, dependent upon the extent of the affection.

Naturally, functional diagnosis gives us no information as to the nature of the disease. If we get from a kidney urine whose freezing point is much higher (nearer 0) than that from the opposite side, and in which sugar is either absent or relatively small in comparison with that of the other side, we will know that this kidney's action is small, and that the work is being carried on by the other kidney, but we must determine the nature of the disease by the history, careful clinical observation, palpation, chemical and microscopical examination of the urine, etc.

While the object of this paper is to give a brief outline of the principles of functional diagnosis and not to report cases, there has recently come under my observation a case which, to my mind, seems to especially emphasize the assistance we may derive from this method, not only

as to determining the functionating power of the one kidney, but the existence and extent of the disease in the other. The case was that of Mr. S., who was operated upon in December, 1904, for a supposed appendicitis. An abscess was opened and the patient recovered with a urinary fistula in the line of incision. He was of the opinion that in some way the ureter had been injured, and on March 1st he came to Dr. Tuholske for operation, expressing the wish that if possible the kidney be saved. I was asked to determine the functionating power of the two kidneys. The cystoscope showed the bladder to be normal; the right ureter was catheterized, the catheter passing for a distance of six inches but no urine was obtained from this side, hence it was assumed that the urine collected from the fistula in the abdomen represented the work done by the right kidney and the urine in the bladder the left kidney. The result of the examination was as follows:

Urine collected from bladder, average amount in twenty-four hours, eighteen ounces.	Urine collected from fistula in abdomen, average amount in twenty-four hours, twenty ounces.
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Hypodermic Injection of Phloridzin 0.01.

Δ.....—1.91	Δ.....—0.55
Sa.....2.0	Sa.....0.25

Hypodermic Injection of Methylene Blue 0.05.

Reaction in urine pronounced in twenty minutes and continued for two and one-half days.	Slight reaction first appeared after eleven hours and continued for about three hours.
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A diagnosis of practically total destruction of kidney parenchyma on the right side was made, and this was confirmed by the operation, which was recently performed by Dr. Tuholske. The kidney consisted of merely a sac extending from the normal position of the kidney to the sinus in the iliac region with almost total absence of kidney structure. The patient is making an uninterrupted recovery.

In conclusion, I wish to say that I believe:

1. That functional diagnosis presupposes the ability to collect the urine from each kidney separately.
2. That in the present state of our knowledge the determination of the freezing point of the blood for the diagnosis of kidney sufficiency is of no value.
3. That the determination of the freezing point of the mixed urine, and the percentage of sugar in the mixed urine after the injection of phloridzin, on account of the wide variations to which they are subject, give us no idea as to the sufficient action of the kidneys.

4. That the determination of the freezing point of the urine from each kidney, and the percentage of sugar in the urine from each kidney after the injection of phloridzin, give us most valuable information as to the existence of disease on the one side and kidney sufficiency on the other.

5. That functional diagnosis in no way supplants or does away with the older methods of kidney diagnosis, that it is a supplement to them and that while its employment requires much time and careful attention to detail, if it is carefully carried out it will add much to the surgeon's peace of mind and the patient's welfare.

THE RELATION OF THE DEFECTIVE TO THE COMMUNITY.*

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A defective person is one who has not developed the strength of mind of the average child, does not come up to the common plane of intelligence. We may restrict the use of the term in the sense of the definition that I have just used, comparing the defective who is deficient in quality of mind with one who is defective through loss of some of the special senses. Michigan gives a great deal of attention to the care of the blind and to the education of the deaf. These are defective persons, but it is not my purpose to refer to them, but to limit what I have to say to the other type, those who are short of intelligence, in want of understanding in the common plane of knowledge and comprehension. We have this mind of ours probably because of the relation which exists between certain cells in the brain and the blood. We get the blood largely through a system of organs that we call digestive organs, through the air that we inhale, through respiration. The action of blood upon the cells of the brain gives us as a product thought, but thought does not grow by virtue of blood alone. Something that we call environment must make impression upon the individual who would think. While blood is enriched and maintained by food and air, mind, as a quality, an attribute of the brain, seems to need something that grows out of the relations in life of one individual to another, and anything which interferes seriously with nutrition, with the quality of the blood, or with the structure of the brain cells, or with the character of environment, gives us as a product a mind that is not quite up to the average, so that when we look at the defective in his relation to the community we must take a comprehensive view, because this person is really a part of us and a part of the whole community. If we had a classification a little better than any that we have now it would simplify the study of the defective very much. We all know some persons who

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are singularly wanting in what we call the common standard of intelligence. We know fools of varying degrees; we recognize idiots and feeble minded persons, and we use these terms to indicate the different types of intelligence short of the normal, and yet we do not succeed, at least have not as yet, in arriving at a reasonable, definite standard of comparison which will enable us always to put the defective person in just exactly the class where he belongs. There is no trouble at all in making out a classification by the speech. The normal individual readily understands speech, readily uses it, and, falling away from speech as he uses it, we may descend in the grades until we reach persons who are absolutely incapable in that regard, who cannot utter any language and who have no comprehension of speech; and you might say that the feeble minded can be divided into two classes, those who can communicate with the world by speech and those who cannot. But that would not cover the ground, that would not help us very materially. Those who are so degraded in this regard, who come so near having absolutely no mind, to a condition of amentia, as it is called, are not the type of defective persons which give the community the most trouble. We always know what those persons are likely to do—it is not very much. But, rising in the scale as we approach the higher class of defectives, we reach, finally, a class in which the moral faculties mainly are affected, a class from which comes our criminal population largely, and a class that we need to study with a great deal more care than we have heretofore. I hardly think that it is necessary for me to say that if a little pains is taken to look over a criminal population, as it appears in the courts in this city, you will find that a large percentage of those individuals are moral imbeciles, and it is not necessary for me to say that we shirk responsibility when we fail to realize what our duty to those persons is. I do not want to branch off here and speak of the indeterminate sentence, in its application to this class of persons, further than to say that it is one of the devices which modern science has given us to bring together in a position or place where we can permanently care for them, a very large proportion of the defectives known as the moral imbeciles. These individuals will be sentenced, not to be released after a few weeks or months to again resume their criminal operations, and to still further endanger our social relations by taking a place in the social organization that is commonly taken by a sound individual. There are probably one hundred and fifty thousand defectives in the United States. About eight thousand of them are cared for in institutions. The remainder go about in the community, they appear in the courts I have indicated or they are cared for in the homes of their parents, and it is well to note the relation which the defective in the home bears to the family. Who has not witnessed a mother with a house full of children, perhaps one of whom was a helpless defective, give all her time, intelligence and strength to

the care of that one, letting the remainder of the family shift for themselves, oftentimes getting into misfortune growing out of the fact that the mother, the director and managing influence in the average American home, has all of her time taken up by this one defective child. It appears to me that if the state is to perform its whole duty in this regard it ought to so arrange its institutions, so refine them, that it could step into the home and say to the mother, "I will take your helpless child and care for it that you may give your time to the sound children, that need your attention." Sometimes the mother does not notice, she is not expected to see the slighter grades of imbecility which culminate in later years in moral imbecility distinctly marked. There is, however, a power and force capable of meeting even this suggestion, and that is represented by the teachers of our schools, with sometimes, perhaps, a little help. The teachers may come next to the parents in comprehension of the capabilities of a child, and discriminate as regards the mentality of the pupils. In the larger cities, schools for the backward children already exist. It is said that there is no city of twenty-five thousand people but what needs a special school or department of its public school system for the special and particular training of defective children. Those who are backward and behind cannot keep up with the ordinary school children. Some little question, perhaps, might come up as to the wisdom of segregating these children in the schools. At first glance it would appear that the backward child would improve by its relation with the more forward children, but I think the consensus of opinion of the teachers who have studied this matter is that backward children do much better under conditions of segregation. In a city like this one, I think with some forty thousand population, if I remember rightly, there might be room for a considerable class of these defectives, who are now in the schools mingling, perhaps, with other pupils, and not having opportunity for special advantages which come from association with teachers especially trained for that type of work.

A great many of these unfortunate people owe their misfortune to the accidents of birth, injuries in infancy. Many of the ills of early childhood are really infections of the brain cells. One great source of this one hundred and fifty thousand defective people is this very thing, and I want to indulge myself one minute and say that surgery offers a great deal of hope for that particular type of case, and I think I can make myself more clear when I say I think the heads of these little ones with nervous diseases ought to be opened much more frequently than they are. We are too reluctant to operate. We neglect to realize to the full value the effect of the damage of blood clots in the after development of the child. Another cause, aside from these inflammations and injuries, is heredity. One is exceedingly fortunate if he can point to an ancestry free from defects of this kind. Heredity is one of the strongest factors

in this matter. Surgery offers very little hope, but has not been neglected even in this direction. Some of the early myths connected with this matter of feeble-mindedness or defectiveness are interesting. We read about individuals who have grown up with wild animals. The story of Romulus and Remus doubtless had its origin in some stray waif of humanity who in the early days was put out into the forest in the hope that he might be destroyed by the elements or wild beasts, and yet happened to have enough energy to meet his natural enemies and earn for himself existence, and grew up with some of the attributes of the brutes among which he lived, and thus gave origin to some of those strange tales. We may say that these defectives are as old as history of the human family. In the middle ages defectives wielded no small influence. They were looked upon, and they are today in most of the latin countries, as children of God. They were the attaches of courts, and history is full of the wise sayings of the fool, sometimes of the jester. I speak of this to show some of the complexities existing in the relationship of the defective to the community, and call the attention to the fact that the problem is not a new one, and my purpose is to try to show you something that Michigan, in its golden age of philanthropy, is trying to do for these people. Our poorhouses, our jails, our schools, our homes, contain numerous examples; we do not need to go far to find them; yet no state in the union is making more deliberate, careful, painstaking efforts to control the relation of the defectives to the community than is Michigan. The institution down at Lapeer cares for a large number of them, and has now under way plans that will increase its population to a degree that will take care of nearly all in the state.

ACUTE PROSTATITIS.

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Acute prostatitis presents itself in several forms, according to the method of causation and the structures in which the inflammation is mainly localized. With no disposition to dogmatism in classification, I incline to the view that the following forms of acute prostatitis are capable of a clinical differentiation that is of vital importance in their study and management:

1. Follicular—*i. e.* parenchymatous—prostatitis, having its point of departure in posterior urethritis, due either to extension or transference of infection to the deep urethra.

2. Diffuse prostatitis, usually resulting from extension of the acute follicular form. It may occur as a primary condition. The presence and degree of interstitial inflammation in the diffuse form depends upon the method of causation, *i. e.*, whether it is due to traumatism,

extension or lymphatic infection. Diffuse prostatitis may be associated with localized or disseminated pyogenic infection.

3. Prostatitis with circumscribed suppuration—*i. e.*, acute suppurative prostatitis—due to extension of urethral inflammation, infection from local absorption or infection via the blood.

4. Prostatitis with disseminated foci of suppuration, *i. e.*, miliary abscesses.

In all forms of suppurative prostatitis more or less diffuse interstitial inflammation is invariably present.

5. Paraprostatitis. This is usually, but not necessarily, followed by abscess, and is associated with one or the other of the foregoing forms.

The basis for classification 1 is due to my belief that the most important ultimate anatomic element of the prostate is the secreting glandular tissue. According to this view, the glands, ducts and follicles of the organ constitute the true parenchyma. The acute follicular or parenchymatous form of the disease embraces most of the cases of so-called acute posterior urethritis, and varies in severity from an involvement of the follicles alone to that of all the secreting structure of the organ. The acute inflammation of the prostatic urethra in these cases is relatively unimportant in the pathologic *ensemble*, save as the point of departure of the prostatic inflammation. Most of these cases should be classified as acute follicular or parenchymatous prostatitis. In practically all cases of so-called acute posterior urethritis from gonorrhoea or other source of mixed infection the inflammation of the mucous membrane of the deep urethra is but a minor part of the morbid condition resulting from such infection. I cannot conceive of an acute inflammation of infectious origin limiting itself to the mucous membrane of the posterior urethra. A few subacute and chronic cases may possibly be met with in which the bulbo-membranous region is involved without extension or transference to the prostatic urethra. It is my belief, however, that in all cases, acute or chronic, in which the prostatic urethra is involved, the glandular elements of the prostate become affected sooner or later. In acute inflammation extending beyond the bulbo-membranous junction it does not seem possible that the glandular elements of the prostate can escape involvement. It is certainly open to argument whether the consideration of so-called posterior urethritis as acute or chronic follicular inflammation of the prostate rather than a disease of the urethra *per se* might not be of great practical clinical importance as explaining the extreme obstinacy of the disease and the impossibility of curing it completely by applications to the relatively small and unimportant affected area presented by the mucous membrane lining the prostate urethra. Looking at posterior urethritis from this standpoint, the question might arise whether deep injections of astringents may not defeat the very object that the practitioner strives to attain in such cases, by impeding drainage from the glandular elements and ducts of the prostate constituting

the principal seat of the infectious inflammation. Associated with these cases there is usually more or less involvement of the interstitial tissue surrounding the ducts and glands, the resulting mechanic conditions depending entirely upon the degree of involvement.

From a clinical standpoint, there would seem to be a broad line of distinction between the acute cases of follicular inflammation from extension of infection from the prostatic urethra and those that result from lymphatic absorption or infection of an abraded surface produced by traumatism, and leading to prostatitic or periprostaitic abscess. On the one hand, we have primarily all of those symptoms characteristic of irritation and inflammation of the true vesical neck—*i. e.*, the prostatitic urethra; while, on the other hand, we have much less vesical irritability with the development of more or less sudden obstruction to the outflow of urine. In acute follicular inflammation retention of urine is rare; not so in cases in which severe interstitial inflammation develops. So frequent, however, is the association of retention with prostatic abscess that the latter is to be strongly suspected in all cases of acute prostatitis in which retention is a prominent factor. Due consideration should, however, be given to the possibility of spasmodic retention in deep-seated inflammation.

In diffuse prostatitis there is usually, as a result of extension of infection from the prostatic urethra, very severe glandular inflammation. Associated with this is pronounced involvement of the interstitial tissue. In these cases, on account of the anatomic conditions already outlined, pain and constitutional symptoms are more marked than in the acute follicular form. Diffuse prostatitis may be the result of lymphatic absorption, in which event pain, rectal tenesmus and urinary obstruction may develop without preliminary vesical irritability. Abscesses may or may not occur in the diffuse variety of acute prostatitis. When they do occur, they may be the result of a general infection of the organ, or an occluded duct or follicle may constitute the primary focus of infection, subsequently rupturing and infecting the surrounding prostatic tissues.

Acute Suppurative Prostatitis.—According to the classification already given, acute suppurative inflammation of the prostate may occur in any one of three forms, *viz.*: (1) Circumscribed abscess, single or multiple. These abscesses may involve any particular portion of the prostate; they may be of considerable size, and one or more may coalesce, forming a large abscess. (2) Disseminated suppuration, *i. e.*, miliary abscesses. (3) Periprostaitic abscess, with or without suppuration in the prostate proper.

Etiology.—While usually due to local sources of infection, any of these forms of abscess may result from general pyogenic infection and may be caused by such infectious diseases as variola and mumps. Some abscesses are primarily due to extension of suppurative inflammation, while others

are due to lymphatic absorption and infection of the prostatic tissues. In some instances, in all probability, one or more of the numerous ducts of the prostate become occluded by the inflammatory swelling incidental to virulent inflammation, with consequent retention of infectious pus in the form of a small abscess cavity, the walls of which are composed of the walls of the duct or follicle involved. Such circumscribed retention abscesses constitute foci of infection of the surrounding tissues. Forming at the periphery of the organ, they may rupture into the paraprostatic tissue, with resulting abscess outside the prostate proper.

Disseminated foci of suppuration in the prostate constitute the variety that is most likely to occur from constitutional infection. The rupture of such a focus, however small, into the periprostatic tissue will almost inevitably result in abscess in this situation.

It is unnecessary to expatiate at length upon paraprostatitis; the most important points have already been dilated upon. It generally occurs as a secondary factor in some one of the foregoing forms of acute inflammation. Suppuration usually occurs, and in some cases the amount of pus may be rather startling, the pus burrowing extensively about the rectum. Retention of urine is usual in marked cases.

The subject of acute prostatic abscess is intimately blended with that of acute prostatitis. There are several points, however, in connection with prostatic suppuration that merit special attention.

Abscess of the prostate in connection with hypertrophy of the organ is more frequent than ordinarily supposed. It may occur spontaneously from infection, although this is extremely rare. Most often it is the direct result of traumatism inflicted during the treatment of the disease, or during catheterization for the relief of retention produced by it. I am of opinion that, in quite a proportion of cases of death following retention of urine dependent upon hypertrophied prostate necessitating prolonged and frequent instrumentation for its relief, the immediate cause is general septic or pus infection from suppuration of the prostate induced by the surgical interference.

Several cases have come under my observation in which the patient developed constitutional manifestations of sepsis, and finally sank into a typhoid condition and died, as a consequence of extensive prostatic and periprostatic abscess that was directly traceable to bunglesome and injudicious catheterization. In some of these cases the abscess is subacute or chronic, and of prolonged duration. Rupture may finally occur into the urethra, rarely externally, in which event there may be sudden relief of obstruction. It is noteworthy that some cases of prostatic abscess occurring in enlarged prostate are ultimately followed by great benefit to the primary condition. The destruction of prostatic tissue by the abscess is followed by cicatricial contraction and diminution of the mechanic obstruction produced by the enlargement. In some instances, however, the abscess cavity does not become obliterated, but remains as

a suppurating pocket, opening more or less freely into the lumen of the urethra, and giving rise to successive reinfections of the posterior urethra and bladder, or even infection of the anterior portion of the canal. This is true of all forms of prostatic abscess. In abscess occurring in prostatic hypertrophy it is interesting to note the marked diminution in the size of the portion of the prostate that happens to be the seat of suppuration. In a case recently seen, an abscess in the right lobe of the prostate in a middle-aged man with prostatic hypertrophy had produced so much shrinkage of the organ that it was hardly, if at all, larger than the normal, while the opposite side was still markedly hypertrophied and indurated.

The occasional occurrence of prostatic abscess in *prostatiques* constitutes a very practical point in the study of prostatic hypertrophy. It is by no means unusual for the first severe symptoms of prostatic obstruction in old men to occur coincidently with the formation of prostatic abscess. Inasmuch as after evacuation of the pus the symptoms practically disappear, an erroneous diagnosis may be made, the case being considered as *ab initio* one of prostatic suppuration.

That a fatal result may follow prostatic abscess, not only in old but in young subjects, must be borne in mind. A case recently came under my observation of a young man thirty-five years of age, who died of what was diagnosed as typhoid fever, but which, as the autopsy showed, was sepsis due to a large prostatic abscess. It is well in all cases of serious prostatic disease to keep a close watch for both local and constitutional symptoms of suppuration. Free incision and drainage would probably have saved the life of the patient to whom allusion has been made. In all cases of acute prostatic inflammation, especially, it is the duty of the surgeon to be on the alert for symptoms of suppuration. Oftentimes, however, a diagnosis can only be made after the pus has discharged into the urethra, bladder or rectum. Healing of prostatic abscess after such evacuation is often quite prompt, but in many cases the admixture of urine with the contents of the abscess causes serious trouble by subsequent decomposition and septic absorption.

Ano-rectal fistula may result in cases in which the abscess opens or is evacuated by the knife via the rectum. Urinary fistula communicating with the rectum, or with the ano-rectal fistula, may also develop*. Urinary fistula following evacuation of the pus via the perineum, is not infrequent.

Morbid Anatomy.—(Comparatively little is known of the early stages of acute prostatic inflammation, especially of the follicular or parenchymatous form. The condition is not fatal, and opportunities for observation are consequently not numerous. So far as determined, however, the process appears to be at first limited chiefly to the mucous membrane

*I have under my care a gentleman in whom a long standing fistula exists between the rectum and prostatic urethra from this cause.

and the follicles and glands immediately tributary to the prostatic urethra; hence, a description of the morbid anatomy of acute follicular prostatitis in its incipency is also that of acute posterior urethritis. In the follicular form there is always a varying degree of involvement of the interstitial tissue, largely dependent upon the duration of the disease. The infectious inflammation probably never limits itself to the prostatic urethra; if the inflammation does not extend below the membranous urethra, however, it may possibly become limited, if not acute. In acute bulbo-membranous inflammation the prostatic urethra is almost inevitably involved sooner or later. The mucous membrane of the prostate is reddened and thickened, as is true of all inflamed mucous membranes. There is almost invariably thickening of the tissues surrounding the lymphatics and blood vessels.

Ulceration does not occur, and resulting stricture is so exceedingly rare that it is hardly worth consideration. The mouths of the prostatic and ejaculatory ducts are involved in the inflammation, thus serving to explain the facility with which it extends to the glandular tissues of the organ. In acute parenchymatous or follicular prostatitis the organ is swelled according to the degree of circulatory disturbance and periglandular swelling. If the process extends to the interglandular, muscular and periprostatic tissues, the diffuse form of inflammation is developed. This corresponds to the parenchymatous form, as described by Thompson. The organ is swelled in some cases to three or four times its natural size. The veins of the prostatic plexus are distended by dark blood. The arterial vascular supply is also engorged. The mucous membrane of the prostate is of a darker red hue than usual. Pressure causes exudation of a cloudy, reddish fluid, containing blood from the engorged capillaries and venules, inflammatory lymph, and fluid from the prostatic glands, with a small quantity of pus. Brissaud and Segond give a very clear description of the pathologic anatomy of acute diffuse prostatitis, as observed in a man dead of complicating pleuro-pneumonia. The glandular tubes were the seat of inflammation varying in intensity at different points. The internal wall of the ducts at points where the inflammation was most intense appeared to be blended with the muscular tissue by inflammatory exudate. The inequality of the inflammatory process was especially noticeable. In different places, notably at the periphery of the organ, marked pathologic changes in some of the glandular tissues coexisted with a healthy condition of neighboring glands and ducts. The epithelium lining the glandular cul de sacs and ducts was replaced by an agglomeration of new tissue elements, often filling the ampullæ of the glands completely. In some instances the degenerative changes had obliterated the normal glandular outlines.

Prostatic suppuration presents itself in several forms. In the follicular form it is similar to that in gonorrhea or urethritis; the pathologic condition from which the process in the prostate was originally derived.

Circumscribed abscess may form in follicular prostatitis. One or more glands become infected, and incidentally their ducts are involved. Occlusion of the latter may occur and a suppurating cyst-like accumulation of pus result. One or more of these accumulations may rupture and contaminate the remainder of the gland. Such abscesses are often responsible for recurrent infection. Miliary abscesses may result from acute suppuration. They may be single or multiple, and more or less disseminated. Large abscesses may be found in some cases. Abscess may occur in the cellular tissue surrounding the prostate: Periprostatic abscess. Some prostatic abscesses are very large. Guyon reports a case in which the urethra was completely dissected out of the prostate, and the urethra completely surrounded by pus. Abscess cavities are generally multilocular and trabeculated. These abscesses may open into the urethra by one or numerous openings.

Lallemand, many years ago, called attention to the fact that in acute prostatitis the ejaculatory ducts may be dilated and thickened from involvement of the mucous membrane. They may be ulcerated or their lumen diminished or even occluded. The seminal vesicles are usually thickened, dilated and contain reddish or puro-sanguinolent fluid. Regarding the accuracy of Lallemand's observations, a certain element of doubt is warrantable; many of his patients were subjected to treatment by the *porte-caustique*, which in itself was not only likely to set up acute prostatitis, but followed by occlusion of the ejaculatory ducts.

In some cases of suppuration the entire glandulo-muscular structure of the prostate is destroyed, as in the case outlined by Guyon. Such a case has come under my observation. It is a matter of regret that the autopsy in this case was not made with more care, the specimen being by no means perfect. The prostate, however, was practically replaced by a suppurating cavity with quite thick walls, apparently representing the capsule of the prostate in conjunction with inflammatory new growth. The specimen was so damaged in removal that it was impossible to obtain a clear idea of the relation of the urethra to the abscess.

Symptomatology.—In acute follicular prostatitis the symptoms are mainly subjective. Frequent and painful urination, pain being especially marked at the termination of the act, and in some cases a certain amount of blood mixed with the last few drops of urine, constitute the principal local symptoms. A feeling of perineal distress, with pain radiating along the urethra into the spermatic cords or down the inner aspect of the thighs is frequently experienced. In some cases there is more or less pain and tenesmus. The stools are likely to be somewhat painful. There may be considerable constitutional disturbance, but, as a rule, this is very slight, excepting where there is more or less diffuse inflammation. In the diffuse and suppurative varieties there is more or less urinary obstruction. Complete retention may come on and persist until the abscess is evacuated, when speedy relief is experienced. When

pyogenic infection occurs independently of follicular inflammation, there may be comparatively little vesical irritation, the symptoms of urinary obstruction preponderating. This is especially apt to be the case in acute abscesses that develop in the course of prostatic hypertrophy.

In diffuse and suppurative prostatitis, pain and constitutional symptoms are especially marked. Depression is likely to be profound, and in *prostatiques* especially the patient may sink into a typhoid state and die with all the symptoms of constitutional pyogenic infection. True pyemia may result as a consequence of localized suppuration. The formation of pus is likely to be heralded by a distinct chill, followed, in some cases, by a succession of chills.

In some cases of acute prostatitis the disease develops very suddenly; in others a few hours, or possibly several days, may elapse before the symptoms become prominent. During this period the patient experiences premonitory sensations of weight and fullness in the perineum, with frequent micturition and a certain degree of depression incidental to irritation of the vesical neck. If abscess forms, severe throbbing pain is likely to come on. This may be lancinating rather than throbbing, radiating, as already stated, into the urethra, groins and thighs. The slightest exercise tends to aggravate the symptoms. The patient very often finds quite early in the course of the disease that slight perineal pressure elicits considerable pain and tenderness, and possibly vesical irritability.

Cystitis may coexist with acute prostatitis, but in my opinion this is infrequent, all of the symptoms being usually explicable by inflammation of the prostatic urethra. In cases having their point of departure in follicular inflammation, the urine contains muco-pus from two sources: (1) That which is directly washed out of the prostatic urethra by the outflowing urine; (2) that which has taken the direction of least resistance backward into the bladder during the intervals of micturition. The first and last portions of the urine in follicular prostatitis are likely to contain considerable muco-pus, the mid-stream being comparatively clear. When there is no follicular inflammation, the condition being primarily diffuse inflammation or localized inflammation incidental to infection and followed by suppuration, the urine contains nothing characteristic until the abscess ruptures into the urethra or bladder. The patient then experiences sudden relief in the perineum and ano-rectal region, the urine flows with perhaps its usual freedom, or at least much more easily than before the rupture of the abscess, and pus suddenly appears in the urine. It does not usually escape from the urethra during the intervals of micturition unless secondary infection of the anterior urethral mucous membrane occurs, or the point of rupture is located anterior to the bulbo-membranous junction.

The objective symptoms of acute prostatitis vary with the degree of diffuse inflammation. Where the pathologic process is largely follicu-

lar, as in a certain proportion of cases of so-called posterior urethritis, local examination elicits very little save more or less tenderness on deep perineal pressure and manipulation of the membranous and prostatic portions of the urethra per rectum. Deep pressure behind the pubes may elicit some tenderness referable to the vesical neck. In the more severe types of diffuse and circumscribed suppurative inflammation, more or less heat, swelling, tension and tenderness of the perineum are noticeable. The prostate presents itself as a hot, tender tumor projecting into the rectum antero-posteriorly. The degree of enlargement varies with the extent of interstitial inflammation, and may be so marked that the finger cannot be introduced into the rectum without considerable difficulty and the infliction of severe pain. When suppuration has occurred a boggy, edematous, uniform or circumscribed bulging of the prostate and periprostatic tissues into the rectum is noticeable. Later on, fluctuation may be evident.

Treatment.—The treatment of acute prostatitis should be active. A brisk mercurial purge should be given, followed by a full dose of some saline in the course of three or four hours. This will unload the portal circulation and produce general depletion. An excellent plan is to administer tablet triturates of calomel, one-half grain every three hours until four or five doses have been given. Coincidentally, four-ounce enemata of saturated solution of sulphate of magnesia, containing glycerine in the proportion of about one to three, should be given. This may be repeated until a number of watery evacuations have resulted. This is the ideal method of pelvic depletion, and is quite as valuable in prostatic disease as in pelvic and abdominal inflammation in the female. Having fulfilled this indication, there are several special measures that are essential. The febrile symptoms call for aconite or veratrum viride, remedies far more reliable than antimony—recommended by Thompson. Ergot and hamamelis are probably beneficial. They are certainly philosophic remedies from a theoretic standpoint. These remedies may advantageously be combined with gelsemium and the bromide of potassium, anaphrodisiac remedies having a special sedative effect upon the inflamed organ. Hypodermic injections of pilocarpine are serviceable, this remedy being a powerful derivative. After the bowels have been thoroughly evacuated, opium is the most effective remedy. It relieves pain and strangury, lessens the frequency of micturition, and counteracts nervous depression. All anodynes act best in acute prostatitis when given by suppository. If the rectum be irritable, the anodyne may be injected into the gut in the form of a thin ointment. Iodoform or eucrophen may be combined with morphine and belladonna or hyoscyamus, and administered by suppository. Caution is necessary in using anodynes per rectum, as most patients are very susceptible to them when so given. If the administration of anodynes per os be con-

sidered preferable to rectal medication, codeine will be found reliable and much less disagreeable than other preparations of opium.

The diet should be restricted to milk or other unstimulating fluid aliment, and the patient should lie quietly upon his back, with the hips slightly elevated. He should be impressed with the absolute necessity of perfect rest for some weeks, for in no disease is movement more likely to aggravate the condition than in prostatitis. In many cases in which acute prostatitis assumes a subacute or chronic form and persists indefinitely, movement, sexual excitement and alcoholic and dietetic indulgence are in great measure responsible. Too much stress cannot be put upon the necessity of perseverance in the rules of genito-urinary hygiene.

Local depletion should be resorted to early, and repeated from time to time as required. This is best accomplished by means of leeches. Five to eight leeches should be applied to the perineum and about the anus, and the bleeding encouraged by warm fomentations. The *rationale* of this treatment is obvious, if the intimate association of the prostatic and inferior hemorrhoidal plexuses be considered. After hemorrhage has ceased, hot poultices or fomentations may be applied to the perineum. Ice has been advocated, rectal suppositories of ice being sometimes useful. Hot water containing laudanum is often serviceable as an enema. Simple hot enemata, several quarts of water being used at each sitting, may be given several times daily with great advantage.

Interference with the urethra should be avoided, the usual treatment for gonorrhea being suspended during the course of the prostatitis. The use of injections may determine the formation of an abscess in an otherwise slight inflammation.

Hot sitz baths, twice or thrice daily, are of marked benefit in prostatitis. They must be very hot and continued for from half an hour to an hour. Should retention occur and opium and hot sitz baths fail to relieve, then, and then only, is catheterism permissible. A small, soft catheter should be carefully used. This failing, aspiration may be required. Rectal examinations should be made as infrequently as possible. The surgeon is usually over-anxious to observe the progress of the case, and in his misplaced enthusiasm is apt to do injury. As the acuteness of the inflammation becomes less manifest, counter-irritation with iodine or blisters to the perineum may be of great service. Systematic and repeated blistering may perhaps prevent the supervention of chronic inflammation.

Under careful treatment the inflammation usually begins to subside and the symptoms improve within a few days, but it is likely to be several months before the prostate assumes anything like its normal size. The slightest excess is apt to cause a relapse, and the patient is ever after predisposed to fresh attacks of inflammation—reinfection—from apparently trivial causes. Slight indiscretions are liable to prevent res-

olution and cause the inflammatory process to become chronic. Prostatitis may consequently be a very unsatisfactory affection to treat, even in the most tractable and conscientious patients. Recurrent infection of the urethra simulating a fresh gonorrhea is one of the most annoying features of the disease.

In a general way, the liability to suppuration in acute prostatitis depends upon the degree of thoroughness with which the foregoing measures are carried out. When the inflammation is due to the absorption of pus microbes, and their products, through the medium of an abrasion or via the lymphatics without abrasion, with resulting interstitial prostatic infection, suppuration is almost inevitable. In the ordinary diffuse form of inflammation, however, and in the follicular form which precedes it, energetic treatment may prevent abscess.

The treatment of acute abscess of the prostate is obviously that of acute prostatitis. Until pus is known to have formed or a strong suspicion of its presence is justifiable, surgical intervention is contraindicated. While conservative treatment by means of poultices to the perineum and rectal injections of hot water may be justifiable in cases in which the presence of pus is extremely doubtful, the practitioner should beware of carrying conservatism too far. Serious results occur from a large accumulation of pus in and about the prostate long before fluctuation is manifest. Fluctuation should always be carefully sought for, but in many cases operation is demanded long before perineal fluctuation can be detected. When the abscess involves the periprostatic tissue, or burrows toward the rectum, digital examination via the gut is likely to detect either well marked fluctuation or the peculiar edematous condition characteristic of the presence of pus.

As soon as the diagnosis of abscess is justified by the development of perineal induration and swelling, characteristic edema, or distinct fluctuation on rectal examination, a free incision in the direction of the prostate should be made in the perineal raphe. This locality should always be selected even where well marked fluctuation on rectal examination indicates the presence of pus in the periprostatic tissue. If pus is not found by the perineal incision, the surgeon can console himself with the reflection that he has adopted the best means possible to prevent abscess. Should suppuration eventually occur, the incision supplies an outlet in the most favorable direction. If several foci of suppuration be found, they should be freely opened and drained. Iodoform gauze drainage should be adopted after evacuation of the pus. Infiltration of urine may possibly occur after the opening of prostatic abscess, but is very rare.

When a prostatic or periprostatic abscess is opened, or discharges spontaneously via the rectum, extensive infection, with the formation of ischio-rectal abscess and external fistula or a permanent internal fistula, may result. In all cases in which the abscess has been evacuated into

the rectum, antiseptic irrigation is necessary. Care should be taken, however, to avoid poisoning the patient by too strong antiseptic solutions. Carbolic acid and mercury bichloride are especially open to impeachment on this score. A saturated solution of boric acid is much safer, although necessarily not so efficient. It may become necessary to divulse the sphincter and to relieve rectal tenesmus or secure perfect drainage. By putting the sphincter at rest it may be possible to induce healing without the necessity of more serious operative procedures. In the event, however, that a permanent fistula results, it should be dealt with as in ordinary cases of ano-rectal fistula. When the abscess ruptures, or is evacuated by the perineal route, there is danger of permanent urinary fistula. When the pus is evacuated in the direction of the urethra, the repeated formation of deep periurethral abscesses may eventually result in perineal fistula.

When the pus is external to the prostate in the paraprostatic tissue, there is less danger of infiltration of urine and urinary fistula than in cases in which the prostate proper is involved.

General supportive measures, and possibly the administration of stimulants, may be necessary after the evacuation of a prostatic abscess. This course should be invariably adopted in cases of prostatic abscess in *prostatiques*. Should general pus infection occur in the course of prostatic abscess, as it is likely to do in old, cachectic, and debilitated subjects, death is practically inevitable. In retention from prostatic inflammation or abscess, especially in old subjects, it may be impossible to evacuate the urine with the ordinary catheter. The catheter *coude* of Mercier may be introduced much more readily than the ordinary variety. The soft Nelaton catheter is often unsatisfactory. In passing the elbowed catheter, the superior urethral wall is so closely hugged by the beak of the instrument that there is comparatively little danger of its penetrating the abscess cavity. Instances have been known where the cavity of the abscess has thus been penetrated and mistaken for the bladder. The important fact to be remembered is that it is far better to evacuate an abscess by external incision than to produce an internal opening into the urethra or allow such an opening to occur spontaneously. It is admitted that in many cases in which the abscess opens in the direction of the urethra the patient speedily recovers, but in a certain proportion of cases permanent infection results with all the dangers of urethritis, cystitis, and recurrent prostatic abscesses.

In all cases of prostatitis after the acute symptoms have subsided, deep urethral and vesical irrigations are necessary for some time to remove the infection upon which the prostatic inflammation depended, and which may bring about its recurrence. The permanganate of potassium is, of course, the standby. Instillations of argol, 5 to 10 per cent.; silver nitrate, $\frac{1}{2}$ to 2 per cent.; argonin, 5 to 10 per cent.; albargin, 5 to 10 per cent.; argyrol, 5 to 20 per cent., all are serviceable. Massage is demanded in all cases of prostatitis, when the acute symptoms have passed and the gland will tolerate the finger.

EDITORIAL COMMENT.

RELIABILITY OF CANCER STATISTICS.

As a science, statistics constitute a branch of the science of logic and may be regarded as consisting in a systematic observation and classification of facts in any domain of human activity. It is the peculiar office of statistics to discern the direction of progress and to measure both the actual and relative strength of the forces which impel it. To the immense importance of statistics, the numerous bureaus of investigations maintained by all governments bear witness. The governmental exhibits of this and other countries at the Louisiana Purchase Exposition, clearly demonstrated the value of statistical inquiries, which have aptly been termed instantaneous photographs expressed in figures.

In medicine, however, statistics have, within recent years, fallen into disrepute. The condemnation by W. A. Freund, of statistics as being "the vilest prostitute," and Talleyrand's dictum: "La statistique c'est le mensonge au chiffres," signify only too frequently the real character of certain medical statistics. On the other hand, there are writers who denounce statistics in order to cover lack of accuracy and thoroughness in their own reports. It is high time that medical statistics should be lifted from arbitrary usage to the realms of law and system. In medicine we cannot do without the experience gained by others, but the mass of information is so great that the mind cannot always grasp it, and we are obliged to reduce the available data to tables of figures. This is true especially in cancer of the uterus, where we are confronted by the question which of the operative methods recommended we should employ in a given case. We must, of necessity, accept that method which yields the greatest percentage of cures, and we would be completely at sea had we not reliable statistics at hand from which we could draw our conclusions.

To Winter (Transactions of the German Gynecological Society, 1901), belongs the credit of having systematized the collection of cancer statistics. He introduced the "absolute Heilungsziffer" (absolute percentage of cures) into our calculations. His mode of compiling statistics was completed and improved upon by Waldstein (*Zentralblatt f. Gynäkologie*, No. 43, p. 1286, 1904), whose suggestions are now accepted by many. Werner (*Ibidem*, No. 1, p. 12, 1905), recently has simplified the somewhat complicated formulæ of Waldstein. He demands that in future all statistics which claim recognition should give the following four figures:

1. How many women, in a given clinic, have been admitted for cancer?
2. How many of these women have been operated upon?
3. How many of the operated cases have died after operation?
4. How many of those who survived the operation are cured after five years?

We, then, obtain the "absolute Heilungsziffer," by computing the ratio of figure 4 to figure 1.

According to Werner, the following exceptions must be made:

(a) Those cases which are yet operable but do not submit to an operation. Their number will be but small. They should be left out entirely, because a patient who does not submit to treatment is like one who has not sought treatment at all.

(b) Those that have died from intercurrent diseases or cannot be traced. In doubtful cases they should be counted as recurrences.

(1) If, however, a case has been under observation for five years, without a recurrence, she is considered cured irrespective of her future condition, or whether she can be located or not.

(2) If a patient dies two years after operation from an intercurrent disease, and careful post-mortem fails to detect the slightest trace of a recurrence, whether in the scar or in the glands, she can be counted as cured. If, however, such negative post-mortem findings be made before the end of two years, the patient should be counted as recurrent. All patients who die within the first five years after operation from an intercurrent disease, no post-mortem being made, and all patients lost from observation within this period, must be considered as recurrences.

It goes without saying, that in every case the diagnosis cancer, must be supported by microscopic examination.

It is evident that statistics which comply with these postulates, will be practically exempt from all objections, and will give a true picture of the efficacy of the respective method of operation.

PURE MILK.

The St. Louis Pure Milk Commission, which has for its prime object the reduction of the death rate in children, has enlarged its scope, and is now not only endeavoring to render the milk as harmless as possible, but is also endeavoring to encourage the production of the highest grade of milk. With this end in view, a set of rules has been adopted for dairies for the standard of excellence of milk and cream. A certification committee has been appointed, composed largely of physicians, whose function it is to investigate the conditions of dairies furnishing the milk supply of the city of St. Louis. The dairymen need not avail themselves of the opportunity to have their dairies inspected and their products examined unless they desire to do so. The commission desires to do nothing prejudicial to their interest. "The experience of dairymen, however, in other cities under milk commissions has shown that it is to the advantage of the better class of milk producers to have the excellence of their milk certified to by a commission composed of citizens not financially interested in any dairy, but simply anxious to improve the health of children and persons in delicate condition who depend upon good milk for their welfare."

A fee of 1 per cent. of the gross receipts for the milk and cream certified to will be charged by the Pure Milk Commission in order to defray the expenses which the commission will incur. This will not amount to one mill per quart of milk, and will not appreciably affect the cost of this milk to the consumer.

The commission offers those dairymen complying with their requirements the use of caps on their milk bottles with the words "Certified by the St. Louis Pure Milk Commission." They will also publish from time to time a list of the dairies whose milk it certifies, together with a condensed statement of the requirements which such milk must meet. Aside from the number of physicians the certification committee will have among its members a chemist, a bacteriologist and a veterinary surgeon, whose duties it will be to inspect the dairies as well as to examine the products chemically and bacteriologically.

The rules laid down by the certification committee to govern the producers of milk are very strict, both with reference to the conditions which must be maintained about the dairy and about the persons handling the milk and the utensils, etc., and the delivery of same. The good which may come from an institution of this sort, prompted by no motive other than the welfare of the community at large, will be immeasurable.

EXAMINATION OF CHILDREN WITH REFERENCE TO BEHRING'S THEORY OF TUBERCULAR INFECTION.

As is well known, Behring regards infection through cow's milk in infancy of the utmost importance in the etiology of tuberculosis. According to this view an infantile tubercular infection is set up, which predisposes to a later phthisis. This theory has been abundantly refuted, and it has been shown that proof is entirely lacking to prove that an infantile infection must precede every case of phthisis. Nageli has shown that tubercular changes are found in only 20 per cent. of children dying before the age of ten. Behring, however, maintains that such infantile infection need not necessarily leave any anatomical changes. The tubercle bacilli get into the circulation and may cause only functional disturbances, or anatomical changes which do not persist. If this view were correct, it would be impossible to demonstrate the existence of a pre-existent, latent tuberculosis by histologic examination. Such proof would be furnished by the finding of tubercle bacilli in the blood. Beitzke (*Berlin. Klin. Woch.*, 1905, No. 2; *Centralbl. f. Kinderheilk.*, March, 1905,) has studied the question from this view point. He examined forty-eight cases very carefully, taking the blood from the right heart of children at the post mortem table. The children ranged in age from two days to nine years. In no case was there any microscopic evidence of tubercular lesion in any organ. The blood from the heart was injected into guinea pigs. In forty-seven of the forty-eight cases the result was absolutely negative; in the other case the result was not definitely positive. Tests by other methods were also negative. So far as they go, these observations would also speak against the correctness of Behring's views as to phthisiogenesis.

MEDICAL AND SURGICAL PROGRESS.

INTERNAL MEDICINE.

IN CHARGE OF

JESSE S. MYER, M. D.

Pleurisy and Its Significance in the Diagnosis and Treatment of Abdominal Diseases.—AUERBACH (*Muenchener Medicinische Wochenschrift*, No. 10, 1905).—It is a well-known fact that in acute and chronic inflammatory processes of the peritoneum, and the abdominal organs in close proximity to the diaphragm, the pleura often becomes involved. Tilger found in a series of 122 general acute and subacute cases of peritonitis, that the pleura was more or less involved in forty-one. In other words, in over twenty-five per cent. of these cases pleurisy accompanied peritonitis.

A careful review of a long series of cases of perityphlitis in the Gerhardt clinic showed the existence of a complicating pleurisy in forty-eight per cent. Pleurisy has also been observed in tuberculosis and carcinoma of the peritoneum, in abscess of the liver and spleen, echinococcus of the liver, cholangitis, cholecystitis, and chronic cirrhosis of the liver.

The author reports a series of five cases in which the presence of a slight secondary pleurisy aided materially in making an early diagnosis of disturbances primary in the abdominal cavity. He maintains that often in obscure diseases of the abdominal viscera, with an entire absence of local symptoms, but continued fever and increasing debility, the diagnosis can be made by the discovery of a slight secondary pleurisy. An early puncture into the pleural cavity may reveal pus, or serum, the nature of which may even indicate the character of the primary process. This, however, is seldom.

The Communicability of Cerebro-Spinal Meningitis.—BUCKINGHAM (*Boston Medical and Surgical Journal*, No. 16, 1905) reports a series of 110 cases of cerebro-spinal meningitis treated in the Boston Children's Hospital during the past seven years. The entire number were treated in the open wards, intermingled with other patients, and were in no way isolated. In spite of this fact no case has ever originated in the hospital, either among the patients, nurses, or other members of the hospital staff. No directions have been given to nurses as to the handling of these cases other than the general precautions always taken in a children's hospital. Articles that may have been used in a lumbar puncture were always disinfected and the same precautions were observed when nasal feeding was necessary.

The author believes that these observations show that living in the same room and breathing the same air with patients suffering with cerebro-spinal meningitis is not itself dangerous, and that some other way of transmission must be sought.

Experiments Relative to Constipation.—GLAESNER (*Wiener Klinische Wochenschrift*, No. 45, 1904) reports a series of experiments relative to constipation produced artificially in animals. In the first series, dogs were given large doses of opium, which limited the actions of the bowels to once in three or four days. In these cases, there were practically no changes in the urine nor any constitutional symptoms.

In the second series of experiments he endeavored to produce constipation by means of intestinal stenoses, tying a ligature around the small intestine so as to leave only a small opening. But this method also failed to produce a more obstinate constipation.

In the third series the desired results were met with. Dogs which had been on a special diet, and under strict observation, until it was determined that the amount of nitrogen ingested corresponded with the amount excreted, were operated upon as follows: A section of small intestine 40 c.m. long was divided at both ends and reversed, the lower end being fastened above and the upper end of the section to the loop below, thereby breaking the chain of peristalsis at this point. The dogs rapidly recovered from the operation, and movements of the bowels secured once every ten or twelve days. The ingesta and excreta were carefully observed, and it was found that the nitrogen and ammonia salts excreted in the feces gradually decreased from the time of operation, while they increased correspondingly in the urine. The dogs gradually lost in weight, developed a marked cachexia, and finally died. This the author attributed to an absorption of toxins. He believes that certain gastro-intestinal disturbances in children, accompanied by constitutional symptoms, can be attributed to stagnation of the feces, and that if the excreta were carefully examined in these cases the diagnosis could be made readily.

Partially Afebrile Estivo-Autumnal Infection, Having Its Origin in New York City.—POMEROY (*Medical News*, No. 1673, 1905) reports a case of pernicious malaria in which there were chills and sweats in the absence of fever. The patient had not been outside of the city in fifteen years. While under observation, he had severe chills and sweats, with the temperature not over 99.6. The examination of the blood revealed the presence of numerous crescentic and ovoid forms of malaria plasmodia. Preparations were made every two hours for two days, and no other varieties were found. Fifteen grains of quinine were given every four hours. Within twenty-four hours the chills and sweats decreased in severity, and the temperature now went up to 100.2. Within a week the patient had recovered entirely and the plasmodia disappeared from the blood.

The unusual features in the case were: (1) estivo-autumnal fever, having its origin in New York City, and (2) chills and sweats without fever, the latter appearing only after the administration of quinine.

General Gonococcus Infections.—WYNN (*Lancet*, No. 4250, 1905) believes that entirely too little attention is paid to the subject of general infections due to gonococci. In every case of pyæmia of uncertain origin one should consider this possibility. He recently observed three cases in the male, in each of which he was able to demonstrate the gonococci

in the blood and cultivate them on serum or blood agar as long as sixteen hours after death. In one case there was pelveo peritonitis, and in all three there was degeneration of the heart muscle, and the kidneys, abscesses in the lungs, and effusion in various joints.

The origin of the trouble cannot always be determined. Peri and paraurethral abscesses, purulent prostatitis and buboes may be the source of the general infection. Acute as well as chronic urethritis may be the source. That the infection is general is proven by the fact that the gonococci may be cultivated from the blood taken from any part of the body.

Cases of Enteroptosis and Cardiaptosis, with Return to the Normal.—EINHORN (*New York Medical Journal*, No. 15, 1905) reports the recovery of six cases of movable kidney and visceral ptosis. Inanition is the most important etiological factor. A high degree of long-continued sub-nutrition is sufficient to cause marked enteroptosis and cardiaptosis.

Predisposing causes are the corset, constriction of the abdomen, getting up too soon after confinement, etc., etc.

The treatment consists mainly in the wearing of a properly fitted abdominal supporter and ample feeding. That the last factor is the more important of the two may be inferred from the fact that the prolapsed heart in these cases returned to the normal after an increase in bodily weight. Ample and proper feeding is the point of permanent importance.

SURGERY.

IN CHARGE OF

WILLARD BARTLETT, M. D.

Surgical Tuberculosis in the Abdominal Cavity, with Special Reference to Tuberculous Peritonitis.—WILLIAM J. MAYO, (*Journal of the American Medical Association*, April 15, 1905).—One pertinent fact to which the author calls attention in this article is that post mortem observations while of extreme value must be taken with a certain degree of reservation from the fact that they point only terminal conditions. Again, statistics must not be allowed to influence us wholly since it is possible to juggle them sufficiently to make them prove almost anything. The surgical material at Rochester coming as it does largely from an agricultural district, produces relatively a small amount of pulmonary tuberculosis, while localized tuberculosis in other parts of the body is relatively much more common. The reason that so much peritoneal and other abdominal tuberculosis is seen in the country is that uncooked milk is largely an article of diet on the farm while it is not so much used in the city in the raw state, it being necessary to sterilize it before it can be transported. During the past ten years 6408 abdominal operations were done at Rochester and of these 184 were for some form of tuberculosis. It is best, where possible, to excise the tuberculosis intestine and not to leave an ulcerating mass to its own devices. In 44 cases a well walled

off process in the Fallopian tubes was found and in these instances there was no evidence of tuberculous peritonitis. But where the tubes were free and the outer ends found stiffened and pointing up into the free peritoneal cavity, there was always dissemination of the process on to the peritoneum. Tuberculous peritonitis in the female is four times as common as in the male, showing that a large number of these infections must come through the tubes. In earlier days we thought that all we had to do for tuberculous peritonitis was to open the abdomen and let in the sunlight but so many of these cases recurred that a local source of infection had to be thought of and this has usually been found by the Mayos to be in the tubes or appendix. Of the 26 patients whose tubes were removed, 25 recovered and not one has since been the subject of a secondary operation, although in some instances the abdomen had been opened previously as many as four times simply to permit the escape of fluid.

The Formation of Bone in a Struma.—SEHRT (*Centralblatt fuer Chirurgie*, No. 13, 1905).—The author examined 28 goiters which were removed in the clinic at Freiburg and in 14 of them found a more or less extensive deposit of calcium salts. A distinct formation of bone had taken place in five cases. This was proved histologically by the presence of all of the requisite elements. These were found at the center as well as at the periphery of calcified areas and in some instances a well developed marrow was seen. It contained fat, blood vessels, giant cells and all of the other well-known characteristic features. The author is of the opinion that a careful investigation will show that in about 35 per cent. of calcified strumæ bone is to be found.

Surgery of the Large Intestine.—PANTALONI (*Archives Prov. de Chir.*, No. 3, 1905).—This author adds another to his many interesting contributions in the field of gastro-intestinal surgery. He opens with the statement that the surgery of the small intestine and stomach is so well worked out that we may be said to follow well fixed rules. However, this is impossible in the case of the large intestine because there are so many peculiar anatomical characteristics of different portions of the large bowel that we must vary our technique according to the field in which we work. The cæcal region is affected by the transformation from small to large bowel, by the presence of the appendix and by the fact that this region is rather firmly anchored. On the other hand, the sigmoid presents absolutely opposite characteristics, and so on, if one desires to enumerate at length. Two salient rules, if followed, will go far toward assuring success in operations on the large bowel. The first is that the portion to be operated upon must be rigorously isolated, the second is that the peritoneum to the outer side of the bowel must be divided longitudinally before anything else is attempted. The four cases which Pataloni reports were operated upon successfully. They were all resections of the colon, the first for a fecal fistula, the second for the same cause and the third as well as the fourth for cancer. In the first instance he made an end-to-side implantation, in the second he did the same thing, in the third he made an end-to-end anastomosis and in the fourth, again, an end-to-side union.

Transperitoneal Ligation for Aneurism of the External Iliac Artery.—CURRIE (*Annals of Surgery*, April, 1905).—About six months before the operation to be described, the patient, a man of 36 years, felt a sudden pain in the right groin after heavy lifting. When first seen his aneurism was increasing so rapidly in size that an early operation was determined upon. The work was done through a median abdominal incision with the patient in the Trendelenberg position. The peritoneum internally to the sigmoid was divided and the artery double ligated with silk. The vein was not seen at all during the operation and pulsation ceased in the aneurism as soon as the procedure was over. Eight days later the pulsation returned in the posterior tibial artery and at the end of eight weeks the patient was discharged completely cured. The author, judging from the way he writes, seems to have found the operation easier than he anticipated and he seems very enthusiastic over the possibility of transperitoneal ligation of the common, external or internal iliac arteries.

The Investigation of Progenitur Thyreopraver.—LANZ (*Beiträge zur Klinisch. Chirurg.*, Band 45, Heft 1).—The author has continued his most interesting experiments for the past eleven years upon animals of various species to find out the effect upon the offspring of thyroidectomy in the parent animal. A hen whose thyroid had been removed laid an egg weighing 5 grams, while a sister animal produced them weighing 50 to 60 grams without any trouble. The opposite of this is shown very nicely by the fact that the feeding of thyroid substance will produce an unusual number of eggs; for instance, it was possible to make such a hen lay just three times as many eggs as the control animals were seen to do. He removed the thyroid of a large number of rabbits, but all of them died of cachexia before the age of reproduction was reached. Nothing could be done with cats. They died of acute tetany almost as soon as operated upon. He had very little better success with dogs. The sexual sense of the few that lived seemed to be completely destroyed. He did thyroidectomy on thirty-eight goats, and made the following interesting observations: Animals under one-half year gave all the symptoms of cretinism. Animals from one to four years old were much less acutely affected. It is interesting to note that herbivorous animals required much less antiseptic precautions. Animals which have horns very soon lose the same or have them deformed. Those over five years of age are not acutely affected, but soon grow old. The development of the bones is later in cretins than in others. It is very interesting of late to note the changes produced by thyroid feeding in artificial cretins produced by the complete removal of the thyroid gland in the early years of the operation before the present limitations were placed upon the procedure by Kocher. A few of these early cases have been hunted up and restored to practically normal individuals simply by this treatment. Another very interesting case was that of a little girl who had been born of a slightly cretin type. In only two years of thyroid feeding she increased remarkably in size, menstruation commenced and she was restored to the state of a practically normal individual.

Popliteal Aneurism.—FAURE (*Bulletins et Memoires de la Societe de Chirurg. de Paris*, No. 11, 1905).—The patient whose case is about to be recited in detail, was a man of thirty-three years. He gave no hereditary tendency or history of disease. Two months previous to entering the hospital he had noticed in the popliteal space of the right leg a new growth. During the intervening period this very slowly increased. There had been no pain, and the patient seemed well in every other particular. There was no difficulty at all in making this out as an aneurism and surgical treatment was undertaken on the 14th of January, 1905. The operation was done under local anemia, and after the growth had been isolated an attempt was made to remove it, commencing above. During the procedure it tore and a large blood clot was evacuated, after which it was removed and the free remaining arterial stumps securely ligated. That same evening the foot was cold, and on the next day discolored. Gangrene set in very shortly, and two weeks after the original operation an amputation had to be performed. This would not have been necessary, as the author thinks, had it not been that the aneurism was so high as to include the origin of the articular arteries, hence there was little chance for anastomosis after interruption of the main current. He thinks at the same time that the Esmarch bandage may have had something to do with the matter. Then it seems that the circulatory apparatus of the patient was at fault in general, since one of the flaps in the amputation wound sloughed.

Surgery of the Posterior Mediastinum, Its Past and Future.—FAURE (*Journal of the Johns Hopkins Hospital*, April, 1905).—All of the earlier operations upon this portion of the body were simply tentative and ended in failure. The main reason for this was that sufficient access was not gained to the thoracic viscera. Faure succeeded twice in resecting the esophagus without killing his patient, although both patients died later through other causes. Still he feels that his experience, which has been far more favorable than that of any one else, has pointed a proper line of approach. Others have attempted to operate through an opening made by dividing two or three ribs, beginning with the second, third or fourth, but Faure claims sufficient access can be gained only when the first rib has been divided, when the shoulder, with the rest of the chest wall, can easily be swung out as far as necessary. The posterior mediastinum then opens up like a book, and nothing is easier than to get at the contents of the chest. Faure hopes that in the future we may be able to save the lives of patients afflicted with cancer of the esophagus. Both of his earlier patients died of a slow suffocation, due to the fact that he left a drain in the posterior mediastinum. With each inspiration more and more air penetrated the space, and after a while the inevitable consequence was noticed. In future he would use no drainage of any kind.

Cachexia and Tetania Thyreopriva.—LANZ (*Centralblatt fuer Chirurgie*, April 1, 1905).—The author has been forcibly impressed by the fact that the goats in Switzerland are very much less affected by the removal of the thyroid than are the animals native to Holland. At Berne he did the operation thirty times and but one animal died of acute tetanus. In

Holland he performed the same thing twenty times, and nine of his animals died of tetanus within the first week after operation. The same marked difference was noticed in the human subject between Vienna and Berne in the older days when the complete thyroid was removed. In Switzerland the most common result was cachexia or myxedema, while in Vienna Bilroth produced tetany by removing the gland completely. It seems, then, that the functional value of the gland differs greatly in different countries, and strange to say, the thyroids of animals in Switzerland are frequently found diseased, just as are those of the human subject, as is well known, in the same locality.

DIAGNOSIS.

IN CHARGE OF

A. E. TAUSSIG, M. D.

The Significance of Fragmental Tubercle Bacilli in the Sputum.—SPENGLER (*Zeitschr. f. Hyg.*, vol. 49, No. 3, 1905).—In the sputum of patients with pulmonary tuberculosis, the tubercle bacilli are sometimes seen to be not of the normal shape and size, but very short and slender and lying in heaps as if the bacilli had broken into fragments. This phenomenon has sometimes been interpreted to mean a very acute process, sometimes as signifying a good prognosis and, again, as without meaning. It occurs, however, much more frequently in the bacilli of bovine than of human tuberculosis, and especially if the conditions for the growth of the bovine tubercle bacilli are relatively unfavorable. For this reason the writer interprets the occurrence of large numbers of very slender, fragmented tubercle bacilli in the sputum, as indicating not only an infection with bovine tubercle bacilli, but also a very energetic resistance on the part of the body to the spread of the process. On the whole, therefore, this phenomenon would be of decidedly favorable prognostic significance. The very interesting observations and conclusions of the writer are of importance but require confirmation.

A Functional Test of the Diseased Heart.—M. HERZ (*Deutsch. med. Wochenschr.*, No. 6, 1905).—The power of the heart to do its work may be tested as follows: The physician, allowing the patient's elbow to rest in his left hand, supports the wrist lightly with his right. The patient is then made to extend and flex the forearm as slowly as possible, doing practically no work except that necessitated by the effort to keep the forearm from moving more rapidly. The pulse is counted before and after the test. If the heart is normal there is practically no difference in the two pulse-rates, but the slightest morbid condition shows itself in a marked retardation of the heart's action as a result of the test. In obesity the test is positive when there is actual degeneration of the myocardium, but not when the interference with the heart's action is purely mechanical.

The Tuning Fork in Physical Diagnosis.—R. N. WILSON (*Medical Notes and Queries*, No. 2, 1905).—The determination of the presence, location and extent of pulmonary cavities is often attended with difficulty. The writer has recently seen a caseous pneumonia with amphoric breathing, a tympanitic percussion note, a brilliant cracked pot sound and whistpered pectoriloquy, in which the autopsy showed no cavity to be present. The use of a tuning fork will often aid in the diagnosis of cavities. The stethoscope is placed over healthy lung tissue and the tuning fork, set into rapid vibration and placed with the handle touching the skin, is made to approach the bell of the stethoscope. As the fork passes from normal tissue to a consolidated area, the pitch rises and the note becomes much clearer; it may, indeed, become evident for the first time. If next it passes over a superficial cavity the note takes on a clear, sweet, musical character, which is never simulated by any other condition. This use of the fork in determining the outlines of solid organs is not new, but its application to the diagnosis of cavities is of interest and should be valuable.

Cardiopulmonary Respiration.—BINETTI (*Gazz. d. ospedali*, No. 13, 1905; *Deutsch. med. Wochenschr.*, No. 7).—The phenomenon may be described as follows: When the patient holds his breath, his mouth being open, air is expelled from his mouth synchronously with the heart beats. These expiratory noises can sometimes be heard nearly two feet from the oral orifice. The phenomenon occurs when, owing to some obstruction in the pulmonary circulation, the right heart hypertrophies. Other portions of the lung then receive an excessive amount of blood, as a result of which air is expelled from their alveoli with every systole.

Perforation of the Duodenum.—TUFFIER, ROUTIER (*Gaz. des Hop.*, No. 35, 1905).—In a recent meeting of the Societe de Chirurgie of Paris (March 22, 1905), a very interesting discussion of duodenal perforation took place. M. Tuffier discussed a case of M. de Rouville. The patient was a young man, twenty-two years old, who was suddenly attacked by violent epigastric pain and vomiting. The pulse was 160, the temperature normal. The point of greatest pain was in the right iliac fossa. A diagnosis of appendicitis, with diffuse peritonitis, was made and an immediate operation done. An incision over the region of the appendix was followed by the escape of considerable pus, and in view of the grave condition of the patient nothing further was done except to provide for drainage. The patient succumbed twenty-six hours later. At the autopsy the appendix was seen to be normal, but a triangular perforation was found in the duodenum at the center of an indurated ulcer. The patient had never presented any symptom indicative of intestinal disease. M. Tuffier went on to say that this error in diagnosis was quite excusable. There have hitherto been reported twenty-three cases of laparotomy for duodenal ulcer. In these twenty-three cases all previous history pointing to ulcer has been absent in nine cases, and has been unmistakably positive in only nine. In all of the cases there was a diffuse peritonitis, the initial pain, however, being absent in eighteen. Often the pain was diffuse, affecting the entire abdomen. In fifteen cases everything pointed to the diagnosis of appendicitis, and in six

more the diagnosis was doubtful. It is thus clear that the differential diagnosis between appendicitis and duodenal perforation is difficult.

M. Routier reported a case just the opposite of that of M. de Rouville. The patient was a young girl who had had gastric trouble, and in whom her physician had made the diagnosis of duodenal ulcer. She had had several severe attacks of pain and was referred to M. Routier for operation. A laparotomy showed the condition to be one of appendicitis and was followed by recovery.

In the discussion M. Faure called attention to the great value of the racic pain in the differential diagnosis between appendicitis and duodenal perforation.

The Widal Test for Typhoid.—AASER (*Berl. klin. Wochenschr.*, No. 10, 1905); SEHRWALD (*Deutsch. med. Wochenschr.*, No. 7, 1905).—Aaser recommends the use of a culture medium, consisting merely of peptone, salt and glucose, for the cultivation of typhoid bacilli to be used in the agglutination test. In this medium the so-called pseudoagglutination does not take place, and the test thus gains in trustworthiness even in the hands of the inexpert. The culture may be made sterile by means of the addition of 1 per cent. formol or carbolic acid, without affecting the delicacy of the reaction.

Sehrwald's recommendation is in a way just the reverse of the above. If typhoid bacilli are grown on a medium offering rather a low amount of nourishment, such as potato, the bacilli grow in long chains, with comparatively feeble mobility. An emulsion of such a culture agglutinates very readily, and a dilute serum that ordinarily shows complete clumping, only after the lapse of hours will produce a positive reaction with such a culture in half an hour, or less. The test is thereby made to consume much less time, but it is questionable whether what it gains in rapidity it does not lose in reliability. Its chief use will be when the test is done macroscopically.

Concerning Fluctuation.—RECLUS (*Gaz. des Hop.*, No. 37, 78th year, 1905).—The term fluctuation is one of the vaguest in medicine. Reclus finds himself able to define it only as follows: "The word fluctuation is applied indiscriminately to each of the different sensations which reveal to the fingers of the surgeon the presence of a collection of fluid in the tissues." In a delightfully written article he discusses briefly each of the different phenomena which have been grouped together under this common term.

1. The condition to which the word fluctuation would apply most literally, is seen only where the fluid is confined in a flabby cavity too large for it. If one portion of the mass be struck, waves can be seen to undulate over the entire area. This phenomenon is found chiefly in ascites, and in certain thin-walled abscesses.

2. The second variety gives the sensation of shock to the one hand when the fluid is tapped sharply with the other, and is also characteristic of ascites.

3. Another sensation may be called return-shock (*choc en retour*). This is felt chiefly when the cavity containing the liquid lies upon a bone or other unyielding base. When struck with the finger the fluid yields, but

the wave-impulse traveling backwards is reflected from the bony surface and returning gives the striking finger a return-tap. Retropharyngeal abscesses give this phenomenon most typically.

4. A fourth variety is characterized by a sensation of withdrawal (*sensation de fuite*). This is found chiefly in cavities of the thorax and abdomen, and in multiple communicating phlegmons of the limbs. When such an abscess is pressed upon by the fingers it promptly empties itself, the pus or other fluid escaping through the communicating channels into the other cavities.

5. A fifth variety is found in certain abscess of the breast and gives the sensation of a perforated wall (*paroi trepanee*). When the finger of the examiner presses upon the abscess, the latter disappears and the finger comes upon a round opening with unyielding walls. The pus has been forced through this opening into the breast itself. If now the breast be taken in the other hand and squeezed, the fluid returns and pushes the examining finger outward.

6. The sixth variety is the one most frequently met in practice. One finger of each hand is placed upon the same tumefaction. When one finger is pressed inwards, the fluid yields there, but presses outwards under the other finger, raising it perceptibly. In fluid collections that are accessible in nearly their entire contour, such as certain hemarthroses or hydrarthroses of the knee, cysts of the spermatic cord or of the epididymis or fluid in the tunica vaginalis, a modification of this method is useful. The sack is compressed at one end by the forefinger and thumb of one hand and at the other end by finger and thumb of the other. When squeezed by the first hand it bulges out between the other, and *vice versa*.

It must be admitted, however, that not only do collections of pus or other fluid fail often to give fluctuation, but we may often get typical fluctuation (the false fluctuation of lipomata, soft sarcomata, etc.), where there actually is no fluid at all. Reclus believes that this false fluctuation can in no manner be distinguished from true fluctuation, and that the judgment of the examiner, based upon other data, must in each case come to his assistance in making a diagnosis.

THERAPEUTICS.

IN CHARGE OF

WALTER BAUMGARTEN, M. D.

Roentgen Rays in the Treatment of Leukaemia.—DOCK (*Am Med.*, December 24, 1904, p. 1083) has made a study of twenty-nine cases of leukaemia treated by the x-rays, reported in the literature, the details of which are sufficiently well given to make them available for study. His own cases have not been observed for such a period that he feels justified in presenting them. His conclusions are best stated in his own words:

“Under treatment with Roentgen rays some cases of leukaemia un-

dergo marked changes for the better. The leucocytes fall to normal numbers and sometimes show no more pathologic cells. The red blood corpuscles improve, the enlarged spleen and lymphatic glands resume normal proportions, the general health seems restored. In some cases the effects are imperfect.

In no case has observation been carried out long enough to speak of cure. In several cases death has occurred while the symptoms seemed to indicate improvement. The mode of action of the Roentgen rays is not known. It probably consists in affecting the tissues that produce the pathologic leucocytes, either directly or more probably through the production or setting free of substances that affect cell formation, or degeneration, or chemotaxis, or all these processes; but further investigation is necessary. At present the improvement must be considered functional and not affecting the original cause, nor in a permanent way the histology of the disease. The improvement of the red blood cells may be due to general stimulation of nutrition, in which suggestion may have a part, or by diminution of lymphoid or myeloid tissue, and thus permitting development of red cells, as suggested by Ahrens.

Though the change seems a functional one, it is possible that treatment in very early stages may be more effective than it has hitherto been.

Roentgen ray treatment of leukaemia is dangerous on account of the usual risk of dermatitis and burns, but probably also on account of toxic processes as yet impossible to explain. No stronger claims can be made for it than can be made for arsenic and certain serums and bacterial toxic substances. But it may prove more certain in its action than arsenic and can be more readily applied in practice than the injection methods. Careful observation and recording of all cases in which the treatment was followed promise advances in our knowledge of leukaemia, with the possibility of gains in practical therapeutics.

No special rules can be laid down at present for treatment with Roentgen rays. Great care should be taken to avoid burns. Methods should be described as fully as possible in each case. The blood should be carefully examined as fully and as frequently as possible, and if possible, urine examinations should be made to throw additional light on metabolic changes."

The Treatment of Leukaemia by Roentgen Rays.—MEYER & EISENREICH (*Muench. Med. Wochenschr.*, January 24, 1905, p. 153) report two cases of spleno-medullary leukaemia, in one of which the number of leucocytes was reduced from 165,000 to 6,100 in a period of three and a half months after 582 minutes of treatment, myelocytes disappearing completely from the blood. In the second case the leucocytes fell from 420,000 to 149,000 in two and a half months after 536 minutes' total exposure, myelocytes persisting, though not in so large proportion as at the beginning of treatment. Marked improvement occurred in both cases in the general health, as seen in the disappearance of fever, the gain in body weight, and an increase in hæmoglobin and in the number of red blood corpuscles. Both patients were able to return to work. The spleen in the first case was greatly reduced in size, but in the second case was not affected. The latter case, however, devel-

oped pains in the splenic area which strongly suggested the formation of infarcts in the spleen.

Further Contributions to the Treatment of Leukaemia by the Roentgen Rays.—SCHIEFFER (*Munch. Med. Wochenschr.*, January 24, 1905, p. 159) reports the results of treatment in five cases of spleno-medullary leukaemia, two of recent origin and three of long standing. The two recent cases responded most rapidly and completely. Two of the older cases responded slowly, and improved chiefly subjectively. One of the three older cases failed to improve, and eventually died.

Leukaemia—The Ultimate Failure of the Roentgen Rays as a Therapeutic Agent.—BROWN and JACK (*Jl. Am. Med. Assoc.*, March 25, 1905, p. 956) report a case of spleno-myelogenous leukaemia which died in their care after a period of observation of sixteen months. After ten months the leucocytes had fallen from 800,000 to 8,000, and the myelocytes had completely disappeared. The patient had regained the appearance of robust health and returned to work, "riding his bicycle back and forth from work." This satisfactory condition was maintained without treatment for four months, when the patient returned complaining of weakness and pain in the back. The leucocytes had increased to 50,000. A month later fever developed, a toxic and finally a typhoid condition set in, in which the patient died. The leucocytes reached a maximum of 78,000, but in the last month (during the toxic state) rapidly diminished to 5,000, at which point they remained.

Autopsy findings, in which unfortunately the bone marrow was not examined, showed that all characteristic leukaemic lesions had disappeared from the organs which were examined. The kidneys showed a remarkable calcification of the convoluted tubules.

PATHOLOGY AND BACTERIOLOGY.

IN CHARGE OF

CARL FISCH, M. D.

About the Virulence and the Immunizing Effects of Typhoid Bacilli.—A. PETTERSON (*Central. f. Bacteriol.*, Vol. 38, No. 1).—Wassermann had shown that typhoid bacilli behave differently from the organism of cholera, in as much as their virulence has nothing to do with their power to produce immune substances, but determines only the degree of immunity to be obtained. Pettersson made investigations in this line, and found that a diluted immune serum, containing 133 immunizing units was deprived of only 69–83 immunizing units by the introduction of different races of the typhoid bacillus. The virulence of these races differed immensely (tenfold). This proves that virulent typhoid bacilli are not to be differentiated from avirulent ones by a higher avidity to the specific immune substance. In regard to the production of the latter in the animal body, it must be said that the avirulent races and even one

virulent race did not produce an immune serum. This would certainly mean that the production of the immune body does not stand in distinct proportion to the capacity of the bacteria of absorbing the substance. While with the vibrio of Asiatic cholera, even minute quantities will give rise to the formation of an immense quantity of immune body, this does not obtain for the typhoid bacilli. The immunizing effects of the latter is reduced by exposing them to a higher temperature. Immunization is, therefore, dependent upon a thermolabile substance. But the capacity for absorbing immune bodies is not decreased by heating the bacilli, and Petterson concludes, from this that the production of immune bodies is not a work of the bacterial receptors, but that of a thermolabile substance.

Laboratory Diagnosis of Variola.—B. L. THOMPSON (*The Journal of the American Medical Association*, 1905, No. 16).—The quick method of Henke and Zeller of imbedding in paraffin in a few hours pieces of tissue by means of acetone as a fixing and hardening agent (referred to by us in this JOURNAL, 1905, March, p. 288) has been used by Thompson for a rapid diagnosis of variola lesions, that at times may be necessary or desirable. As, after the method, a histologic diagnosis may be made in about three hours, it will prove of great value in doubtful cases. It is to be recommended that the author lays the emphasis on the recognition of the specific histologic lesions of variola; two other laboratory methods almost simultaneously published, one of American origin, the other announced in Germany by Juergens, consider more the characteristic cell-inclusions as a means of diagnosis. The latter resorts to corneal inoculation and the finding of the inclusions in them. As even in the earliest stages of the variola lesion the histologic changes are, as far as our present knowledge goes, absolutely characteristic and specific for it, the application of the acetone method by Thompson will make it a quick means to arrive rapidly at a reliable diagnosis.

Structure of Vaccine Bodies in Isolated Cells.—JAMES EWING (*American Medicine*, 1905, March 25).—In the attempt to obviate the great difficulties encountered in retaining vaccine bodies for investigation in unaltered shape and appearance, Ewing has succeeded in adding very important information to our knowledge of these formations. The method used by him (and a method, as the reviewer can confirm by personal experience, easily applied and not surrounded by intricacies or difficulties) is the following: With vaccine or variola material in rabbits or other animals corneal ulcers are produced. After varying periods these ulcers are lightly touched with a clean slide or coverglass, thus producing on the latter an impression of the ulcer, consisting of the cells of the loosened corneal epithelium. By successively touching the ulcer a number of times, a series of impressions can be obtained, practically removing the whole of the ulcer. The specimens are dried at the ordinary room temperature, and then treated like blood specimens. The Giemsa method is the one most to be recommended (application of the solution for only five to ten minutes.) In such specimens it can be distinctly shown that the vaccine bodies are continuous with the cyto-reticulum, very often, too, with the nuclear reticulum. The bodies which in fixed

and stained tissues invariably are surrounded by a clear zone of greater or smaller thickness, do not show this after this method, proving this clear area to be an artefact. Gradual changes in the staining reaction of these bodies can be studied, as well as the appearance they give when isolated from degenerating cells and lying free in the serous fluid. There is nothing in the pictures obtained after this method in the least suggesting a parasitic character; if there are parasites present in the bodies they have not been discovered and must lie within the meshes of the reticulum. Ewing's work does finally away with the parasite nature of the cytoryctes.

Further Contributions to the Theory of Histologic Fixation.—W. BERG (*Arch. f. Mikrosk. Anat.*, Vol. 65, Heft. 2) is of the opinion that the method of Fischer, to judge from the action of fixatives on highly diluted solutions of proteids, is not correct as far as the fixation of protoplasm is concerned. The substance to be tested must, on the contrary, be in a condition more resembling that of protoplasm; it must be gelatinous and besides must form the main bulk of a simple test specimen of histologic character. He selected for this purpose the heads of the spermatazoa of the salmon, that to about 96 per cent. consist of a compound of nucleinic acid and protamin. Varying the conditions of his experiments as much as possible he studied the action of the different fixatives used in histologic methods on this substance. In regard to the fixatives, he comes to the conclusion that they exert a double effect on the substance, vacuolization and rigidity with insolubility in water. As to vacuolization, there obtains an analogy to the behavior of a solution; it means, in other words, a change in structure and has to be used as a guide for estimating the degree of the artefacts produced. The effect of the second reaction is the insolubility of the substance, that it has acquired when brought in contact with water. The degree and the rapidity in which this change is brought about gives an estimate of the value of a fixative. The two effects do not depend upon each other; osmic acid, for instance, hardly produces any vacuolization, while it very quickly brings the material to a pronounced state of rigidity. The author himself suggests that even from objects like those examined by him as yet no general conclusions can be drawn as the conditions may vary greatly even in substances very similar to them.

GYNECOLOGY AND OBSTETRICS.

IN CHARGE OF

HUGO EHRENFEST, M. D.

The Fate of Parts of Ovarian Tumors, Left After Ovariectomy.—SCHROEDER (*Zeitschr. f. Geb. u. Gyn.*, Vol. liv, part 1).—The author gives in this article the interesting histories of three ovarian tumors. In the first patient a pseudo-mucin kystoma was removed by laparotomy. A very exact microscopic examination positively established the benign nature

of the tumor. Three years and a half later the abdomen had to be reopened and general carcinosis of the peritoneum was found. The writer believes that in this case at the time of the first laparotomy small particles of the benign new growth were disseminated in the peritoneal cavity, which later underwent a malignant degeneration.

In the second patient laparotomy was performed, but on account of dense adhesions it was impossible to remove the tumor, which proved to be a cystadenoma of the ovary. The wall of the cyst was sewed into the abdominal wound and the cyst opened. A fistula formed which remained patent for several years in spite of several attempts to close it. At times fecal matter and gas was expelled through the opening. Another laparotomy was performed. But again the tumor proved inoperable, and therefore nothing could be done except an attempt made to extirpate the whole canal, which lead down into the pelvis. Through drainage was established from the lower angle of the laparotomy wound into the vagina. One year and a half later the abdominal fistula finally closed. A year later it opened again, disappeared later. Seven years and a half after the first operation the vaginal fistula is still secreting, and in the place of the abdominal fistula a hernia has developed. The tumor itself does not show any symptoms of malignant degeneration.

The third case belongs to the group of the rather rare "secondary formation" of a tumor. A dermoid cyst which obstructed the expulsion of the fetus during labor was pushed up into the abdominal cavity. It ruptured and its contents gave rise to the formation of a new tumor. A little more than a year after the confinement the patient returned to the hospital. A tumor of the size of the fist is felt to the right above the pelvic brim. Another immovable tumor can be felt under the left costal arch. Laparotomy was performed. The pelvic tumor was found to be a dermoid cyst of the right ovary. The mass under the left costal arch was fixed to the abdominal wall and removed only with great difficulty. This tumor was made up of fatty sebaceous matter pervaded by granulation tissue which contained a very large number of giant cells.

Eclampsia Toxines.—DIENST (*Centralbl. f. Gyn.*, No. 12, 1905) advances in this interesting article a new eclampsia theory. He suggests that eclampsia results from the transgression of fetal blood into the maternal blood on account of a leakage in the placenta. His theory is based upon the assumption which of late is decidedly gaining in favor, that fetal blood is heterogen to the maternal; that is, acts upon maternal blood like the blood of another species. By injecting fluid into the shed placenta of eclampsia patients through the umbilical arteries he could demonstrate that in the majority of the cases the integrity of the placental covering was disturbed. In a similar way he injected methylene blue into the still adherent placenta immediately after the expulsion of the fetus, and succeeded in certain cases in sending the methylene blue into the maternal system, from which it was then eliminated through the kidneys. Dienst's experiments and deductions probably do not settle the vexed problem of the etiology of eclampsia, but they must undeniably be regarded as a most interesting addition to the various eclampsia hypotheses which are based upon the "lateral chain theory" of Ehrlich.

On the Use of Caustics.—R. CHROBAK (*Wiener klin. Wochn.*, No. 11, 1905).—The writer warns against the indiscriminate use of vaporization of the uterus. The effect is not even, and a too deep escharotic effect with subsequent cicatrization of the uterine cavity cannot be positively avoided. He acknowledges, however, the advantages of vaporization in checking uterine hemorrhages in cases of hemophilia.

Chemical caustics should never be used in too concentrated form, because a thick eschar has decided advantages. He uses nitric acid, formalin, tincture of iodine, crude acetum pyrolignosum, preferably applied with the intrauterine applicator covered with a thin layer of cotton. The application should not be repeated before the old eschar has sloughed away.

Paresis of Facialis and Hypoglossus After Spontaneous Delivery.—STEIN (*Centralbl. f. Gyn.*, No. 11, 1905).—A case of this kind is described by the writer. The baby was born by a primipara after a labor of more than twenty-three hours. A swelling of doughy consistence was found over the left mastoid process, which was taken to be a small hematoma. The paresis of the facial nerve disappeared within eight days—that of the hypoglossus a few days later. The author assumes that there was besides an extracranial also an intracranial hematoma on the base of the brain, very small so that only the hypoglossus became involved. A similar case is quoted from literature, but no explanation offered for the cause of this hematoma.

PEDIATRICS.

IN CHARGE OF

ALFRED FRIEDLANDER, M. D.

Relation of School Methods to School Diseases.—At the 1903 meeting of the American Medical Association, Herdman and McBride were appointed a committee to determine the relation of school methods to the production of neuroses, psychoneuroses and other "school diseases." This committee has now presented its report (*Jour. A. M. A.*, April 15, 1905). After discussing the question in detail the following conclusions are reached:

"In the opinion of your committee the American Medical Association should place itself on record as advocating and urging the inauguration of a thorough and systematic medical inspection of public schools and school children in every section of the country.

"1. In the interests of public health, since it is a potent means for detecting and preventing the spread of contagious and infectious diseases.

"2. For the purpose of securing to the child, while in attendance on school, the most favorable hygienic and sanitary conditions.

"3. For the purpose of getting exact knowledge regarding the physical and mental capacities of each child, in order that the methods of instruction may be intelligently directed to meet individual needs."

Dissemination of Streptococci Through Invisible Sputum in Relation to Scarlet Fever.—HAMILTON (*Jour. A. M. A.*, April 8, 1905), attempting to prove whether or not scarlet fever patients actually disseminate streptococci into the surrounding air, sterile petri dishes were filled with rabbit's blood agar and were used to catch the invisible droplets of sputum expelled from the mouths of scarlet fever patients when coughing or crying, or when breathing heavily with the mouth open. Fifty cases were thus tested, cultures being made from the tonsils at the same time. These tonsil cultures showed streptococci in forty-seven out of fifty cases. The plates showed streptococci in sixty-six per cent. of the cases tested. It seems fair to assume that a strain of streptococcus, which is virulent for one human being is virulent for others also. The author, therefore, concludes that there is a real danger from such dissemination of streptococci from scarlet fever cases. She, therefore, urges that scarlet cases having streptococcic complications be separated from cases without such complications, that in hospitals where such isolation is impossible, gauze masks be used to cover the patients' mouths.

Melæna as a Sign of Intussusception in Infants.—VERNON (*These de Paris*, 1904).—*Rev. Mens. des Mal. De l'Enf.*, February, 1905, says that melæna is a sign of the first importance in the diagnosis of acute intussusception in infants, being found in over ninety per cent. of the cases. It is one of the earliest signs, showing itself ordinarily a few hours after the accident. Among a series of sanguinolent stools there appears one stool of pure blood. Such a stool is of the greatest diagnostic significance. The melæna is usually accompanied by vomiting and by abdominal pain. These signs rarely fail. On the other hand the sausage-like tumor and tympanites can often not be detected until a much later stage of the affection. In the first year of life a stool of pure blood, especially if rather large, may be considered almost pathognomonic of intussusception. Inasmuch as this sign usually comes on very early, it permits of an early diagnosis, and thus of early surgical intervention.

Acute Arthritis in the Newly Born.—HUTAN (*These de Paris, Rev. Mens.*, March, 1905), says that acute arthritis of the newly born may be due to several causes, of which the most common is gonorrhœal blennorrhagia. Several joints are affected simultaneously, as a rule, in the gonorrhœal cases. The joints may suppurate, and general infection then ensue. Such infection is nearly always due primarily to the gonococcus, though the ordinary pyogenic organisms may cause secondary infection. Other causes of acute arthritis may be erysipelas, osteomyelitis, or infection with the pneumococcus. Acute articular rheumatism is not absolutely unknown. It is also possible that certain of these acute forms of arthritis in the newly born may be due to generalized infection as a result of scarlet, typhoid, or variola. The cases belonging in this category, however, must be rare.

Influenza in Childhood.—SPIEGELBERG (*Kinderarzt XIV.*, 9, *Archiv. f. Kinderheilk.*, 41, p. 138), gives a critical resume of the literature of the last fifteen or twenty years. The influenza bacillus has been found in nearly all organs in childhood. Early infancy would appear to possess

a relative immunity, but no age is absolutely immune. In early childhood the gastro-intestinal symptoms are most marked, thereafter the nervous symptoms. The incubation period is short (one to eight days). The onset is usually sudden, with the child apparently perfectly well. Diffuse redness of the pharynx is one of the most characteristic symptoms. The fever is not typical; it may go to 104° or over. Frontal and parietal headache, weariness, exhaustion, pains through the whole body, especially in the neck, shoulders and knees, are all usually present. The pulse is rapid, small, and often arrhythmic. Cardiac weakness is often noted. On the part of the respiratory system, there is a descending infectious catarrh, the bronchitis being ordinarily dry. Bronchopneumonia is common, but typical influenza pneumonia is very rare in childhood. The manifestations on the part of the respiratory system are usually not particularly malignant. Opinions differ as to the constancy of enlargement of the spleen. The kidneys are sometimes affected. Earache and otitis media are common, so, too, severe conjunctivitis. Special nervous symptoms, often noted, are: Headache, pressure over the eyes, hyperæsthesia along the spinal column, vertigo, delirium and stupor. Meningeal irritation and completely developed meningitis are common. The latter is, however, usually secondary. Hemorrhagic encephalitis is described. Tetany is noted as a frequent sequela. Psychoses may develop. Neuralgia and vesical atony are frequent. Various exanthems are described.

The course varies from three days to about three weeks. Relapses are rarer in childhood than in adult life, and the general prognosis of influenza better.

ORTHOPEDICS.

IN CHARGE OF

NATHANIEL ALLISON, M. D.

Trans-pelvic Lines for Determining Displacement at the Hip.—STEWART L. M'CURDY, M. D., Pittsburg, (*Amer. Jour. Ortho. Surg.*, April, 1904).—There is no condition in surgery that causes more anxiety than injuries and diseases about the hip joint where there is a question as to the diagnosis. Nelaton's line is inaccurate in the most skillful hands, depending as it does on holding a tape line between the anterior superior spine and the tuberosity of the ischium; two observers may find a difference of an inch in the position of the trochanteric eminence. Bryant's triangle has fallen into disuse and is not mentioned in some of the modern surgeries. M'Curdy proposes a line, this line passes through the spines of the pubic bones at right angles to the median line, the umbilicus serving as the vertical of the triangles. This line passes outward across the hip joints, and passes over the trochanteric eminences when the heads of the femora are in the acetabula, no fracture of the neck or displacement existing. Where displacement exists it may be measured by taking the distance on a perpendicular erected to intersect the anterior superior spine on the affected side from this transpelvic line. This method may be applied to skiagrams.

Sacro-Iliac Disease in a Young Child.—A. THORNDIKE, Boston. (*Amer. Jour. Ortho. Surgery*, April, 1905).—This affection is comparatively rare in babies and young children, they do not possess an immunity against sacro-iliac disease however as the case reported shows. A boy at the age of sixteen months fell from a rocking chair striking his left side, he had no trouble for a month, then an abscess formed and pointed just to the left of the anus, this discharged off and on for three months; the child then presented the appearance of a tumor in the abdomen, diagnosis was doubtful between sarcoma of the left kidney or a large abscess confined by the fascia of the iliacus muscle. Operation was decided upon and a large abscess cavity was opened which had developed in the iliac fossa retroperitoneally, with complete destruction of the joint and separation of sequestra. The great tolerance of little children for destructive osteitis in this region is illustrated as the boy made good recovery after drainage was established. Sacro-iliac disease in young children may accompany or coincide with caries of the lumbar spine.

On the Means of lengthening, in the Lower Limbs, the Muscles and Tissues which are Shortened through Deformity.—PROF. DR. A. CODIVILLA, Bologna, Italy. (*Amer. Jour. Ortho. Surg.*, April, 1905).—As things stand at present, we trust to empiric measures to overcome the contraction of the muscles, whereas we should use mathematical precision. The treatment by the surgeon is determined rather by habit than by the exigencies required in the individual case, the operator has recourse to plaster apparatus or to continued traction according to his opinion as to which of these usual methods is best. Where we have an old fracture of the femur healed with deformity, an osteotomy done for coxa-vara, dislocation after typhoid, a pseudo-arthritis of the upper third of the leg with displacement of fragments, in fact any injury of the lower extremity which necessitates strong traction in order to get a good result. We realize here that traction applied to the muscles is apt to lose its efficiency, and that the amount is limited as the patient cannot stand enough, also that if it is applied in sufficiency the soft parts are very apt to break down and slough away. The author of this paper is of the opinion that this force should be applied to the skeleton, that the soft tissues and skin should be excluded from the danger of necrosis from pressure. To obtain this direct transmission of force to the bones themselves, he drives a large nail through the back part of the heel, which by means of two lateral ferrules, fixed in a plaster bandage, holds the foot distracted to the proper degree. No necrosis, pain or inconvenience arises from this nail, he has applied it to 26 cases with lengthening of from 3 to 8 cm. The nail staid in place 3 to 5 weeks.

The Treatment of Congenital Dislocation of the Hip by Axillary Abduction.—ROBERT WERNDORFF, Vienna (*Zeit. f. Orth. Chir.*, Band xiii, Heft 4).—In a certain number of the cases submitted to the Lorenz operation relaxation takes place upward and forward from the fixation position of right angle abduction. Where these hips have slipped out at least twice the author recommends that they be put into a position of the most extreme abduction, the knee comes into the axilla and the trunk and thigh are inclosed in a plaster dressing. He has used this method

of fixation on eight cases, four are still in their casts, the other four are favorable results.

Therapy of Flat-Foot.—ANTONELLI, Pavia (*Zeit. f. Ortho. Chir.*, Band xiii, Heft 4).—The technic of an operative procedure for the cure of static flat-foot is here described. Since muscular activity is the most, in fact, the prime factor in maintaining the plantar arches, the object should be to strengthen up these arches, to increase the activity of the supinators and to lessen that of the pronators. This may be done by carrying the tendon of the extensor proprius hallucis under the plantar arches and there fastening it, by making the tendon achilles longer and the tibialis posticus shorter, also by lengthening the peroneus and transferring the second toe long extensor to the great toe.

The Recurrence of Torticollis After Operation.—A. SCHANZ, Dresden (*Zeit. f. Orth. Chir.*, Band xiii, Heft 4).—When there is recurrence after an operation for torticollis the unsatisfactory result is the result of one of two conditions, either the shortened muscle was not thoroughly divided, or the process after the operation has resulted in band formation. Provided our operation is thorough we must depend on some form of support to hold the head corrected so that these bands will be long enough to achieve our aim. The author describes a thick cotton bandage, this gives an elastic pressure to the neck and efficiently extends it, is more comfortable than plaster.

Report of the Present Condition of the Cases Operated Upon for Congenital Dislocation of the Hip.—CHARDES DWIGHT NAPIER, M. D., Brooklyn (*Brooklyn Med. Jour.*, April 1905).—This report covers the present condition of the cases operated upon by Prof. Lorenz at the Kings County Hospital, Brooklyn. A summary of the result is as follows:

(1) Posterior dislocation, result anterior dislocation; (2) posterior dislocation, result anatomical cure; (3) posterior dislocation, result anatomical cure; (4) posterior dislocation, result fracture, failure; (5) posterior dislocation, result probably anterior dislocation; (6) anterior dislocation, result anatomical cure; (7) anterior dislocation, result anterior dislocation.

Anatomical cures, 43 per cent.; improved, 28 per cent.; failures, 28 per cent.

NEUROLOGY.

IN CHARGE OF

SIDNEY I. SCHWAB, M. D.

Family Spastic Paralysis Associated with Amyotrophy.—HOLMES (*Rev., Neurology and Psychiatry*, April, 1905).—Two cases are described of this rare affection. These are cases of a progressive family disease affecting at least two members of the same family. It seems justifiable to group

such cases into a definite class of which the family affection, the onset in early life and the tendency to slow progression of the symptoms are the distinguishing features.

Bilateral Sympathectomy for the Relief of Epilepsy, with Report of Three Cases.—SPRATLING PARK (*Journal of Nervous and Mental Disease*, April, 1905).—This paper is chiefly of interest because it contains the first report of the microscopic study of the ganglia removed. The changes found in the removed sympathetic nerves are as follows: Pigmentation of a greater or less number of nerve cells of the cervical ganglia in all three cases. Presence in every one of the three cases of at least one nerve cell with double nucleus in some one of the extirpated ganglia. In one of the cases about a half dozen of such cells were found. Degenerative changes in the modulated nerve fibres in the sympathetic cord and ganglia of the excised portion. In one case a focus of inflammation of perivascular round-cell infiltration.

General Paralysis Due to Tuberculosis.—KLIPPEL (*Rev. Neurologique*, April 15, 1905).—This contribution aims to show that dementia paralytica can result from various disturbances in the brain produced by various causes and that tuberculosis is one of these. Tuberculosis showing itself as a dementia paralytica can follow any of these causes, tubercular encephalitis, degenerative encephalitis and infectious encephalitis. A case is described to illustrate the author's contention. The case is clinically one of dementia paralytica. At the post mortem evidence of tubercular disease of the cortex of the cerebrum and also more advanced degenerative changes of a tubercular nature in the brain were clearly demonstrable. The author is convinced that this case is a further proof of the possible aetiological factor of tuberculosis in dementia paralytica. From this fact there follows the statement that the condition itself is not to be regarded as a disease *sui generis* but as following a variety of processes affecting the cortex and the rest of the cerebral substance.

The Pathology of Friedreich's Ataxia.—RAINY (*Review of Neurology and Psychiatry*, April, 1905).—This paper gives the pathological data derived from an examination of two cases of Friedreich's ataxia. A careful clinical description of the cases are given as well as an outline of the literature. The following conclusions are in part given as the result of the study. 1. A typical case of this disease of long standing may show no changes in the brain or cerebellum. 2. The appearance of the diseased tracts in the posterior and the lateral columns of the cord are sufficiently similar to incline one to the belief that in both they are the consequences of the same pathological cause. 3. The nervous elements are themselves primarily involved and the increase of interstitial tissue is secondary. 4. The cause of the disappearance of the nerve fibrils is a matter of conjecture. 5. The degenerated nerve structures in the cord are replaced by neurological elements.

GENITO-URINARY SURGERY.

IN CHARGE OF

H. McC. JOHNSON, M. D.

The Treatment of Pyelitis.—KELLY (*Med. Record*, April 8, 1905).—After discussing the causation of pyelitis and quoting interesting cases, the author lays great stress upon its magnitude, and sums up his paper in these words:

1. It is important to take cognizance of a pyelitis of any grade whatever, as it may at any time become a menace to functional value of the kidney, or even to life itself.

2. The severer grades of the affection are often the sequelæ of a milder pyelitis of long standing.

3. The first step in the investigation is to determine the extent of the affection by eliminating the amount of pus in the urine and the relative number of organisms,

4. It is important to determine the cause of the infection, which is often of a mechanical nature, and therefore easily relieved.

5. By removing the cause, the disease may either be cured, or so far benefited that a subsequent complete relief by means of local treatments is easily brought about.

6. The milder forms are best treated by rest, abundant water and urotropin.

7. If there is not a speedy improvement, the next simplest plan of treatment is the catheterization of the kidney every two or four days for the purpose of evacuation, distension of the pelvis, irrigation, and instillation. Boric acid and nitrate of silver are the best drugs in this connection.

8. Improvement should be measured by the disappearance of pus from the urine and the diminution in the organisms, taking say three platinum loops as a measure in conveying the infected urine to the agar.

9. A patient improved, but not cured (complete absence of bacteria), should be watched in the intervals of treatment, and guarded with especial care in case of any intercurrent disease. Should such a disease supervene, urotropin is a good prophylactic.

10. The severer forms of the disease may be treated by irrigation, which often brings great temporary relief. As a rule, however, the kidney must be opened and drained; if it has been extensively diseased, it should be removed.

A New Method for the Detection of Calculi in the Ureter and Kidney.—CABOT (*Amer. Jour. Urol.*, March, 1905).—To the phonendoscope the author has attached a ureteral catheter.

Running through its whole length, fitting loosely, is a whalebone bougie, or a wire. The former is not easily obtained the right length, so he is now using the latter. It should be at least thirty inches long. This wire protrudes at the distal end of the catheter and on to it is se-

curely fastened a metal tip or head. This should be blunt, the size of the usual blunt catheter tip. It is firmly soldered in place.

We thus have a good conductor of sound. The wire in the catheter lumen is protected from moisture and pressure as well as contact with the metal of the cystoscope. The proximal extremity of the catheter and wire are firmly secured to a metal holder which is arranged to screw into the diaphragm of the phonendoscope, which is connected in the usual way with the ears. The slightest sounds are carried from the point of contact to the ears. The least contact of the metal end with a stone can be heard with great distinctness and the presence of a calculus thus determined.

In operations on the kidney we frequently wish to determine the condition of the ureter and whether or not it be obstructed. By the use of this instrument we can determine this point and also can decide by the sound whether the obstruction is caused by a calculus having lodged there.

The Cause of Incontinence as a Sequel of Prostatectomy.—RUGGLES (*Ann. Surg.* April 1, 1905).—Of thirty-nine cases of prostatectomy done at Rochester, 3, or 7 2-3 per cent. had as a sequel incontinence of urine. Ruggles considers the different theories that have been promulgated to explain this result, such as injury to the vesical neck, or prostatic urethra, or both, and injury to the nerve supply of the vesical sphincters. According to him the internal vesical sphincter is in health quite weak, and as soon as three or four ounces of urine have collected in the bladder, it relaxes, and permits the urine to pass down, filling the posterior urethra, until it meets the resistances or the external sphincter. The function of the vesical or internal sphincter is then at an end until after the next act of urination. So that to explain incontinence after prostatectomy satisfactorily we must look to paralysis, partial or complete, of the external sphincter. The author, therefore, suggests that if perineal prostatectomy is performed, the incision into the urethra should be as close to the prostate as possible, exactly on the median raphe of the compressor urethræ; and the utmost care be exercised to avoid stretching and laceration of the muscles.

Prostatism Without Enlargement of the Prostate.—CHETWOOD (*Ann. Surg.*, April, 1905).—From an experience of thirty-six cases, Chetwood finds that contracture of the neck of the bladder is a common cause for vesical obstruction; its relief is safe and sure by his method of galvano-prostatotomy through a perineal opening; and it is often an explanation for what has been termed "Prostatism without Enlargement of the Prostate."

Lavage in the Treatment of Diseases of the Kidneys.—JOHNSON (*Amer. Jour. Urol.*, February, 1905).—In a number of cases where oxaluria or lithæmia was the causative element in the production of symptoms complained of by the patients presenting themselves for treatment, marked improvement followed the first lavage. In pyelitis and parenchymatous nephritis, lavage produces startling results. Those local remedies appearing to yield the best results are solutions of silver nitrate, protargol,

nargol, or other of the silver salts in a warm saturated solution of boracic acid as a vehicle. Twenty-two illustrative cases are reported and these conclusions seem justified:

1. Internal medication alone is not sufficient in treating many diseases of the kidney.
2. Lavage of the kidneys can be earnestly recommended as a safe and efficient adjuvant.
3. Many stubborn cases of lithæmia quickly yield to this measure.
4. In severe types of inflammatory lesion of the kidneys alleviation is always possible and complete cure may be accomplished.
5. Fluids employed in lavage should be of proper temperature and injected slowly in small quantities. The strength should gradually be increased.
6. Every precaution demanded in a major operation should be carefully observed in this manipulation.

LARYNGOLOGY AND OTOTOLOGY.

IN CHARGE OF

WILLIAM E. SAUER, M. D.

The Principles of the Treatment of Maxillary Sinus Disease.—GERBER (*Archiv fuer Laryngologie und Rhinologie*, Band 17, Heft 1).—The fact that there are constantly new methods being advocated for the treatment of diseased conditions of the maxillary sinus shows that an ideal treatment has not been found. Gerber discusses the various methods which are at present employed, pointing out their shortcomings. At the conclusion of his article he lays down the following principles:

1. The first principle is always to open the antrum, when possible, at the point nearest its natural communication with the nose, and to avoid any permanent opening with the mouth or pharynx.
2. Recent and mild cases should be irrigated through a canula which has punctured the antral wall in the middle meatus.
3. In cases of long standing, and in which there is a thick, creamy pus with a foul odor, a large communication should be made between the nose and the antrum in the middle meatus. This opening may extend down as far as the inferior meatus if it is found necessary.
4. In very old and obstinate cases a large opening should be made into the antrum in the fossa canina. After the antrum has been thoroughly inspected and cleared of its contents a large communication should be made between it and the nose in the middle meatus. The opening in the canine fossa should be immediately closed and the after-treatment carried out through the nose.
5. Exceptions to these rules are only made when, through unusual nasal deformities, the after-treatment cannot be carried out through the nose.

Postoperative Nasal Hemorrhage; Calcium Chloride; Secondary Anemia; Rapid Recovery.—WILCOX (*American Medicine*, March 18, 1905,) reports a case of severe nasal hemorrhage following the removal of a portion of the middle turbinate and a small spur under cocaine and adrenaline chloride by means of the snare and saw. Four days after the operation a profuse hemorrhage occurred, following gymnastic exercise. This hemorrhage resisted the ordinary treatment, and continued for six days. The patient was then given forty grains of calcium chloride once daily by mouth, and the hemorrhage gradually ceased. The author wishes to emphasize the importance of giving calcium chloride in large doses, either by mouth or rectum, coincidentally with surgical methods for controlling hemorrhage. He ascribes the successful issue in the case reported to this drug.

On the Treatment of Acute Coryza.—HENLE (*Deutsche Medicinische Wochenschrift*, February 9, 1905).—Finding great relief at the onset of a severe cold in the head from the application of Bier's constriction to the neck in his own case, the author applied the same in five other cases. He found that a pressure of from 50 to 60 mm., as recommended by Bier in other portions of the body, could not be borne about the neck, but found that 25 mm. was sufficient to produce the desired result. In his own case all subjective symptoms were greatly relieved after the bandage had been applied for one hour. After an interval of an hour the bandage was again applied and allowed to remain three hours, when it was again removed with complete relief. The same results were obtained in four other cases. In another case the treatment failed owing to the presence of a chronic hypertrophic rhinitis, and that the bandage was not allowed to remain a sufficient length of time. In no instance was there any discomfort from the bandage.

The Value of the Present Quantitative Tests for Hearing, with the Demonstration of a New Apparatus.—BRYANT (*Medical Record*, April 1, 1905).—After discussing the various methods and contrivances used in testing the hearing, and pointing out their many disadvantages, the author briefly describes his phonographic accoumeter. This instrument consists of a phonograph so constructed that the amount of sound reaching the patient can be accurately gauged and at the same time be under control of the expert. Bryant believes that it provides a standard for the comparison of tests equal to those used by ophthalmologists. He summarizes his paper as follows: The methods at present in use do not give adequate tests for the perception of the human voice, nor do they give results which can be compared. My phonographic accoumeter does all of these things and more. It overcomes the chief difficulties and inaccuracies formerly accompanying quantitative hearing tests. It gives a satisfaction and accuracy not hitherto attained. It furnishes a test with the human voice which does not vary and can be multiplied and repeated indefinitely. Unilateral or bilateral tests can be applied without doubt or error. Eyesight aids are eliminated. It furnishes a sure way of detecting all feigned deafness short of total bilateral deafness, and it is an ideal machine for furnishing acoustic exercise, which has been recommended in the treatment of deafness.

On the Cause and Treatment of Serious Hemorrhages Following Tonsillotomies.—HEUKING (*Archiv fuer Laryngologie und Rhinologie*, Band 17, Heft 1).—After briefly reviewing the causes usually given for serious hemorrhage following tonsillotomies, the author reports in detail six cases in which he found the hemorrhage had its origin in each instance in a wound on the posterior pharyngeal pillar (arcus palato pharyngeus). The author believes these findings throw a new light on the etiology of a large number of severe hemorrhages following the removal of tonsils. Heuking accounts for the frequent wounding of the posterior pharyngeal pillar in that during the act of gagging a contraction of the palato-pharyngeal muscle occurs, throwing the tonsil with the pillar forward; thus a portion of the pillar is easily caught in the tonsillotome. He believes that this accident is not nearly so apt to occur when the knife or scissors are employed, as every act of the operator is done under direct control of the eye, which is often not the case when the tonsillotome is employed. After the hemorrhage is once established the author claims that too often much valuable time is lost in applying styptics, when by simply making digital compression at the site of the wound the bleeding can be promptly and effectively controlled. In only one of his cases was it necessary to continue the compression longer than an hour; the others ceased promptly in from ten to forty minutes.

DERMATOLOGY AND SYPHILIS.

IN CHARGE OF

MARTIN F. ENGMAN, M. D.

Preliminary Communication Regarding an Immune Body Capable of Inhibiting the Development of Cancer in Mice (adeno-carcinoma), JENSEN—G. H. A. CLOWES (*Johns Hopkins Hospital Bulletin*, No. 169).—This communication deals with one phase of an investigation which is being carried out at the present time by the author and Dr. H. R. Gaylord. A considerable number of authentic cases of recovery from cancer in human beings are recorded in literature, but no attempts have apparently been made to test the effects exerted by serum of such recovered cases upon tumors of like nature in other individuals. The writer has not, up to the present time, been able to procure human cases of a type suitable for experiments of this nature, but the possession of a series of readily transplanted mice tumors, some of which recovered spontaneously, has afforded an opportunity of making some preliminary investigations. Small, rapidly growing tumors in mice seemed to be affected by the influence of this serum, while the larger tumors, weighing from three to four grams, were not appreciably affected, but the cachexia from which the mice suffered was in all cases alleviated. The tumors in the control mice were unaffected, and developed in the usual manner, leading eventually to death. A serum from mice cured of their tumors by the above treatment was found to possess a certain degree of activity, but it did not contain the activity exhibited by the serum obtained from mice in which the tumors had spontaneously disappeared. Microscopical study of the tumors undergoing retrogression was exceedingly in-

teresting. The point of these experimental investigations upon which the author laid special stress was the evidence afforded by the experiments of the existence of immune forces antagonistic to the development of cancer.

Treatment of Scalp Ringworm.—T. COLCOTT FOX (*London Practitioner*, April, 1905).—Removal of the hair over the whole head is recommended, the hair to be clipped short to the length of about one-half inch. Each diseased area should be carefully marked out by analine, pencil or iodine solution, and these areas should never be lost sight of in the process of treatment. Washing the head is recommended only when absolutely necessary, as it is not a curative procedure. To the healthy surface should be applied some mild innocuous parasiticide, such as carbolized vaseline. Depilation is a great assistance, but very difficult to carry out properly. Applications recommended by the author are as follows: An ointment which sets up a desirable degree of inflammation without pus formation is the following:

R	Cupri oleatis.....	3i to v
	Olei amygdal.....	3i to iii
	Adeps lana.....	3i
M. ft. ung.		
R	Hydrarg. oleatis absolute.....	3ii to iiss
	Adeps lana.....	3iiss to ii
	Acidi oleici ad.....	3i
M. ft. ung.		

These ointments can be progressively increased in strength, and more and more vigorously applied until the desired effect is produced.

Nervous Asthma and Maladies of the Skin.—A. BAYET (*Annals de Derm. et de Syph.*, March, 1905).—In this work the author essays to establish the relationship existing between asthma and cutaneous affections. He arrives at the following conclusions: In certain cases there seems to be a direct balance immediately between the two affections. In other cases the disappearance of the eruption markedly affects the crises of the asthma. In others, the periods of eruption are accompanied by aggravation of the respiratory symptoms.

Syphilitic Vegetations Developing Upon an Eczema.—M. DANLOS (*Annals de Derm. et de Syph.*, March, 1905).—A particularly interesting thing about this report is the histologic study of the point of lesion. 1. There was found considerable hypertrophy of the epidermis. 2. Between the prolongations of the epidermis there was formed along the veins an abundant cellular exudate. The epidermis presented all of the characteristics of proliferation to the point of vascular abscess formation. The infiltration about the veins consisted of lymphoid cells.

Syphilis Nodulare Hypodermique.—J. DARIER and CIVATTE (*Ann. de Derm. et de Syph.*, March, 1905).—In the course of the manifestations of intense secondary syphilis, generally of a grave nature, there often occur subcutaneous nodules which are usually situated about the subcutaneous veins, the structure of the nodules being that of a syphiloid, and is a secondary benign thrombo-phlebitis. *Restitutio ad integrum* is obtained from mercurial treatment.

OPHTHALMOLOGY.

IN CHARGE OF

JOHN GREEN, JR., M. D.

The Question of Iridectomy in Glaucoma Simplex.—F. E. CHENEY (*Ophthalmology*, April, 1905).—In an attempt to determine the proper procedure in any given case of glaucoma simplex, Cheney would have us pay attention to the following points:

(1) Tension. This is relative; what would be increased tension for one eye may be normal tension for another. The evidence from palpation should be supplemented by a knowledge of the effect of the intraocular pressure upon the optic nerve head. A glaucomatous excavation should be taken as sufficient evidence of a supranormal degree of intraocular pressure for that particular eye.

(2) It should not be forgotten that, without operation, an eye may retain good vision indefinitely, whereas blindness may quickly follow as the result of an iridectomy.

(3) Operation may be advisable in a comparatively young individual with a reasonably long expectation of life, and inadvisable, under similar ocular conditions, in an older patient who may escape blindness by death. Attention should be paid to the family longevity.

(4) Temperament. Certain individuals will accept with resignation the gradual diminution of vision as among the many unrelievable burdens of life. Others will be made quite wretched by the knowledge of the probable outcome of their disease, and would prefer to risk the chance of immediate blindness by operation with the possibility of staying the disease.

(5) In an elderly patient with one eye blind from glaucoma, Cheney advises against operation on the fellow unless the course of the disease has been unusually rapid in the first (blind) eye.

On Peritomy for Diffuse Corneitis and Other Affections of the Cornea.—S. SNELL (*Ophthalmology*, April, 1905).—A rather large experience with this operation has impressed Snell with its positive utility, more especially in diffuse corneitis and in the salmon-colored corneal opacity of trachoma. He has never seen any ill effects in any of his operated cases which now number over two hundred. The operation is performed as follows: Beginning above, the conjunctiva is severed all around at a distance of from two to three m. m. from the corneal margin. The portion remaining adherent to the cornea is dissected up and removed with scissors.

Other conditions in which this treatment has proved of value are chronic ulcer of the cornea, superficial spreading ulcer in old people, detachment of the corneal epithelium and relapsing iritis.

Superheated Hot Air Baths in Ophthalmic Practice.—OSTWALT (*Ann. d'Oculist*, March, 1905).—Ostwalt has designed an apparatus to which he has given the name "Thermaerophore," for the purpose of directing upon the eye or other portion of the head a stream of superheated hot air without danger of inducing cerebral congestion.

A metal cylinder encloses a spiral tube, below which is a Bunsen gas jet. By means of a rubber bulb cold air is forced into the tube, where it is heated and makes its exit into a "basket" covered with non-inflammable cloth. The rim of the basket is made to conform to the contour of the face surrounding the eye. The basket contains a thermometer, and is strapped to the head by a metallic band.

The degree of heat and the rapidity of rise in temperature can be regulated by the frequency of compression of the bulb, which is operated by the patient. The ocular globe can bear from 150°C. to 175°C., on account of the abundant secretion and rapid evaporation of the tears. The skin of the lids is more sensitive and will burn at lower temperatures, so that the patient must keep the eye wide open during the treatment.

Sittings, of thirty minutes' duration, are given daily. After twenty minutes the flame is extinguished, and slowly cooling air is projected upon the eye for ten minutes. The eye is found very much injected, and is protected by a bandage for half an hour.

Note on the Action of Antipyrin in Optic Atrophy.—VALUDE (*Ann. d'Oculist*, March, 1905).—Valude's experience has convinced him that the indications for the use of this drug in optic atrophy are well marked but sharply limited. He finds that it is efficacious only in descending atrophy consecutive to an acute infectious encephalic process.

Valude's formula is as follows:

Aquæ.....	50 grams
Antipyrin.....	25 grams
Cocain.....	0.25 grams

2 cc. of this solution is injected every other day into the dorso-lumbar region.

If there is no visual improvement after twenty-five injections, it is useless to persevere in the treatment.

Retinitis Punctata Albescens.—C. PASCHEFF (*Ophthalmic Review*, March, 1905).—The first to draw attention to this variety of retinitis was Mooren. The principal features of the disease are: (1), the distribution of several hundreds of white spots over the fundus of both eyes, principally about the region of the macula lutea and optic nerve; (2), concentric limitation of the fields of vision; (3), diminution of central vision, and (4), night blindness. The affection is generally found in young individuals and often in the several members of the same family. Consanguinity, according to Gayet and Fuchs, is the etiologic movement. In Pascheff's case, the papillo-macular and temporal regions of the retina contained several hundred small separate white spots lying in the deeper layers of the retina. Some of the spots were round with sharply outlined borders, others were oval with faintly indefinite margins. They were independent of the blood-vessels which passed over them and were quite normal. Central vision was normal; there was some concentric contraction of the fields of vision. The interesting feature of the case was the fact that the child had hereditary syphilis. Under mercurial treatment for one and one-half months the night blindness almost disappeared, many of the spots lost their brilliancy and sharp outline and the visual fields in ordinary light became almost normal.

A congenital atrophic process of the pigmented retinal epithelium is held responsible.

SOCIETY PROCEEDINGS.

ST. LOUIS SURGICAL CLUB.

Meeting of April 12, 1905.

Dr. Francis Reder in the chair.

FUNCTIONAL DIAGNOSIS OF KIDNEY DISEASES.

Dr. Wm. M. Robertson read a paper with the above title, for which see page 396.

DISCUSSION.

Dr. Wm. S. Deutsch said the findings had been verified at the operation and the patient was making a very nice recovery. At one time Israel was one of the most bitter opponents of the Casper method, but from a conversation with Professor Israel Dr. Deutsch believed Professor Israel was using this method in his kidney work. This patient said he had been operated upon for appendicitis and that was really all he knew about it, so that the diagnosis Dr. Robertson had made helped more than anything else in establishing facts.

Dr. W. C. G. Kirchner felt that laboratory examinations were of particular value because in operations on the kidneys it was essential to know which kidney was affected. He had seen several cases where it was of particular value that the diagnosis had been made before hand and the affected kidney differentiated. He had recently, in a post mortem, found the kidney in the pelvis. The renal artery was given off just above the bifurcation of the iliacs. The other kidney was in its normal position. This pointed out the necessity for a careful examination in all kidney diseases and the catheterization of the ureters in doubtful cases.

Dr. M. B. Clopton felt that it was unfortunate that as a method it was not dependent upon any particular findings, but entirely upon the comparison of the secretion of the one kidney with its fellow. It was never a simple matter to catheterize the ureters and would always be a procedure with some danger attached, but as it was the only method of obtaining the urine satisfactorily enough to permit the use of cryoscopy, it seems to be a question that should be weighed pretty carefully before going ahead with ureteral catheterization. The method had its limitations and it should be only a means of last resort. The finding of horseshoe kidney, single kidneys, etc., were very rare occurrences and something not at all likely to be encountered.

Dr. Deutsch said that in early years sepsis may have had much to do with results, but the mortality was greatly reduced after the introduction of ureteral catheterization. It should not be a dangerous procedure if carried out by competent men.

Dr. Charles H. Dixon said, in regard to the carrying of infection up into the ureters, if the work was done by one accustomed to it, with the care he should take, there was no reason why infection should occur.

Dr. John C. Morfit thought ureteral catheterization might have been excluded in this case for the urine from one kidney was coming through the abdominal fistula. Ureteral catheterization should be avoided when it was possible to make a diagnosis without it. The freezing tests showed the comparative quantity of solids in the urine, but the same thing would be shown by the specific gravity, so far as the practical value in this case was concerned, could he not have told as much by the ordinary chemical and microscopical examination?

Dr. John M. Grant said that two years ago a patient had been turned down by an insurance company for some kidney trouble and had consulted him. An examination showed a little albumin, and he had intended making a more thorough examination later, but in the meantime a friend had sent the patient to a prominent specialist who

catheterized the ureters and as a result of that catheterization the man was very sick for three months.

Dr. Robertson, in closing, stated that Casper catheterized both ureters, with no bad results. Nitze catheterized only the one on the suspected side. In most instances it was possible to get results good enough for practical use by catheterizing one ureter and collecting the other urine from the bladder, but there was the question, whether any urine, with the ureteral catheter in place, would escape into the bladder. Nitze, in a recent article, described an instrument which he claimed absolutely prevented the coming down of any urine. In regard to the case presented, he did not think the diagnosis could have been made in any other way. The urine from the fistula had a specific gravity of 1006, while that of the bladder was 1022, and he was passing daily about two ounces more from the fistula. There was a little trace of albumin in both. There were granulations about the edges of the wound, with bleeding and pus, but it could not be told whether the pus came from the kidney or from the sinus. There was no history further than that he had been operated upon for appendicitis and had this sinus left. The speaker had never seen a case where this method had been used and it indicated disease on one side, that, when the case came to operation, it was not proved correct. He had seen cases where this method of diagnosis had failed to show disease of the kidney, still it was believed to be there, operation done and no disease found. This method of examination showed the comparative work of the two kidneys, and when a man had to operate on the kidney he must be familiar not only with the pathological lesions, but also the functional power of the kidney. Clinical, chemical and microscopical examinations should be made and in addition this method would give great assistance.

BOOK REVIEWS.

THE SURGERY OF DISEASES OF THE APPENDIX VERMIFORMIS AND THEIR COMPLICATIONS. By WM. HENRY BATTLE and EDUD. M. COINER. W. T. Keener & Co. 1905. Chicago.

Since the literature on this subject has become so very abundant it is impossible for one who has not access to a large library to really get a good grasp of the subject. These men have made it their special aim to write from the standpoint of practical surgery, and to construe chiefly from the large material that is constantly passing through their hands. They have introduced sections on acute abdominal diseases, carcinoma, tubercle and other diseases of the appendix and life insurance.

DIE DIREKTE BESICHTIGUNG DER SPEISEROHRE. Oesophagoskopie ein Lehrbuch fuer den Praktiker. Von Prof. Dr. HUGO STARCK, mit drei Farbigen Tafeln und Zwanzig Abbildungen. Wuerzburg: A. Stuber's Verlag (C. Kabelzsch). 1905.

The value of a work of this kind along a field which is so little trodden in our country, at least, becomes apparent when we take into consideration that the advance made in medicine during the last half century was almost wholly toward improvement in technique. At the rate we have progressed in the recent past, it seems only reasonable to think that we shall soon thoroughly and satisfactorily explore all of the body cavities which have a means of communication with the external world. Examination of the esophagus has long since become a routine practice of value in many of the European clinics. For more than twenty years experiments along this line have been carried on, and it is hoped that the use of the esophagoscope will soon become a common thing in this country, as is the ophthalmoscope or the laryngoscope to-day. The volume at hand will do something toward bringing about this result, since it details the experiences of a man who examines more than one hundred patients a year in this way.

DIET IN HEALTH AND DISEASE. By JULIUS FRIEDENWALD, M. D., and JOHN RUHRAEH, M. D. Published by W. B. Saunders & Co., Philadelphia. 1905.

The purpose of this volume is well expressed by the authors, namely: that it has been prepared to meet the needs of the interne and medical student, as well as for a reference book for the general practitioner and for nurses' training schools. While the greater part is devoted to the diet in special diseases, it contains an adequate description of the physiological basis and the principles of diet, and of the various classes of foods. Perhaps its point of greatest merit is the importance which it gives to the definite knowledge of food values which it places at the disposal of the reader, and the recognition which it gives to the importance of a knowledge of the physiology of nutrition. Of particular value is the section on infant feeding. The work is practical throughout, but at the same time based upon a broad knowledge of the literature of the subject.

GALL STONES AND THEIR SURGICAL TREATMENT. By B. G. A. MOYNIHAN, M. S. (Lond.), Senior Assistant Surgeon to Leeds General Infirmary, England. Octavo volume of 386 pages; illustrated with text cuts, some in colors, and nine colored inserted plates. Philadelphia, New York, London. W. B. Saunders & Co. 1904. Cloth, \$4.00, net.

Mr. Moynihan's very extensive work, together with Mayo Robson, fits him for the work at hand. Every phase of gall stone disease is dealt with, and various features are illustrated by the histories of selected cases, and many rare, unique conditions being shown in consequence of the material at hand being so large. The illustrations are

unusually fine. The paper bears the print and binding of that most desired in books. This monograph of 386 pages is up to any similar work in the English language. It is hoped that such a volume will lead to gall stone surgery being instituted at an earlier period of the disease than is now generally the case.

REGIONAL MINOR SURGERY. By GEORGE GRAY VAN SCHIACK, Consulting Surgeon to French Hospital, New York. Second edition, enlarged and revised, 228 pages, bound in cloth, profusely illustrated; price, \$1.50. International Journal of Surgery Co., New York.

The fact that this little book appears in the second edition is a guarantee that it has proven satisfactory. It describes the treatment of those conditions that are met with every day by the general practitioner, and thus saves wading through a lot of material in which he has no interest. The busy man will appreciate the advantage of having placed in his hands just what he needs in the way of minor surgery without going into details of what the man with a well equipped hospital is alone able to carry into effect.

A COMPEND OF THE DISEASES OF THE EYE AND REFRACTION, INCLUDING TREATMENT AND SURGERY. By GEORGE M. GOULD, A. M., M. D., and WALTER L. PYLE, A. M., M. D. 3d edition, revised and corrected. 109 illustrations, several of which are in colors. Philadelphia: P. Blakiston's Son & Company, 1012 Walnut street. Price, \$1.00 net. 1904.

It is rather surprising to the reviewer to find that a sense of justice compels him to commend a quiz-compend. In explanation it may be stated that the reason this little work merits particular praise, lies in the fact that it does not resemble, either in plan or purpose, the ordinary publication of this sort.

There are certain omissions which we are rather surprised to find in a work prepared by such progressive ophthalmologists as Drs. Gould and Pyle, and for their benefit in preparing the inevitable fourth edition, we would say that the description on page 76 of the connection between convergent strabismus and hyperopia, does not at all represent the attitude of present ophthalmic opinion. On page 84, the removal of the lens in high myopia, now a recognized ophthalmic operative procedure, is damned with faint praise. On page 153, in discussing the treatment of epithelioma of the lid, nothing is said of that therapeutic means which has practically displaced all others, namely, the x-ray. Neither do we find (p. 160) in the paragraph devoted to the treatment of purulent dacryocystitis anything about extirpation of the lacrimal sac. In the category of excellences we may mention the useful table on page 26, which gives at a glance the relation between the obsolete inch system of numbering lenses and the present dioptric system.

A LABORATORY MANUAL OF HUMAN ANATOMY. By LEWELLYS F. BARKER, M. B. Tor., Professor of Anatomy in University of Chicago and Rush Medical College. J. B. Lippincott Company, Philadelphia.

This manual is written with the hope that it may occupy the position between the manual that gives the student too much, the "spoon feeding" guide, and the guides that do not give him enough, the author has been brought to the realization of the fact that many students need some sort of laboratory guide or manual in order to become independent workers. Laboratory instructors also need such a book, a book that will be safe in the hands of a student who has not had the advantage of previous training in laboratory methods. One that will not keep him from referring to descriptive text-books and atlases on anatomy, but, on the contrary, will stimulate him with the desire so to do. The nomenclature used is that which was formulated by the German Society of Anatomists, and which is rapidly being adopted in the best English and American laboratories. There are three hundred illustrations of which a special index is given. The book is printed well and the character of the plates is similar to that found in the large anatomical atlases.